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NSSDC NATIONAL SPACE SCIENCE DATA CENTER

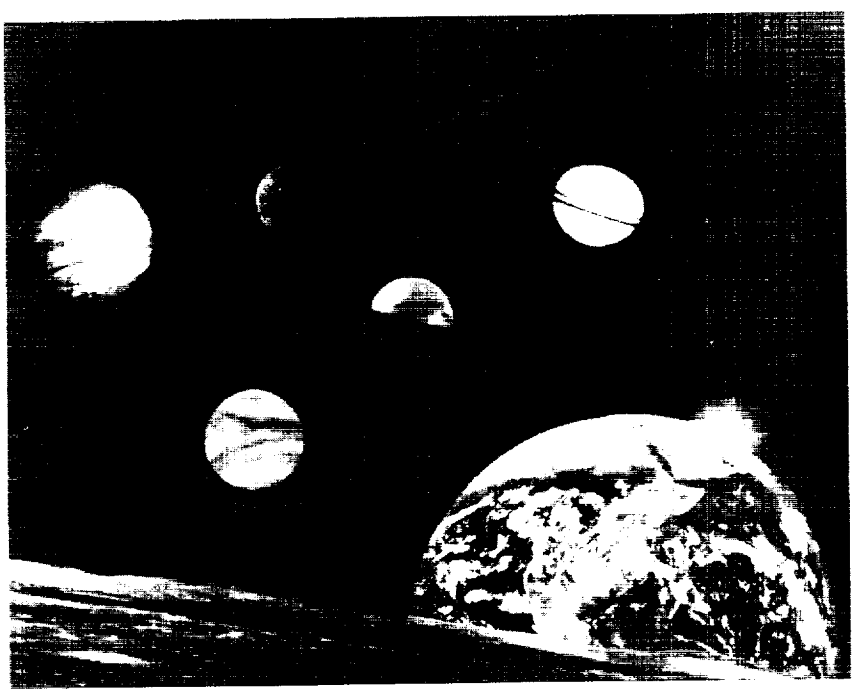
WORLD DATA CENTER A for ROCKETS AND SATELLITES

87-03

DATA CATALOG SERIES FOR SPACE SCIENCE AND APPLICATIONS FLIGHT MISSIONS

Volume 1B

Descriptions of Data Sets From Planetary and Heliocentric Spacecraft and Investigations



April 1987

(NASA-TM-89695) DATA CATALOG SERIES FOR SPACE SCIENCE AND APPLICATIONS FLIGHT MISSIONS. VOLUME 1B: DESCRIPTIONS OF DATA SETS FROM PLANETARY AND HELIOCENTRIC SPACECRAFT AND INVESTIGATIONS (NASA) 154 p G3/90 N90-[illegible]014[illegible] Unclas 01[illegible]74

CATEGORIES OF SPACECRAFT DISCUSSED IN THIS SERIES

PLANETARY AND HELIOCENTRIC

This category includes probes to the various planets of the solar system and probes designed to make measurements of the characteristics of interplanetary space. Also included are the probes that will pass out of the solar system into interstellar space.

METEOROLOGY AND TERRESTRIAL APPLICATIONS

This category includes geocentric spacecraft whose primary mission is to make remote sensing measurements of the earth and its atmosphere. Spacecraft that carry instrumentation to make geodesy and gravimetry measurements are also included. Technology, engineering, and communications spacecraft or investigations are not included because NSSDC does not archive such data.

ASTRONOMY, ASTROPHYSICS, AND SOLAR PHYSICS

This category consists of scientific satellites designed to conduct investigations of the sun, stellar objects, nonstellar sources, and interstellar phenomena. These satellites are geocentric except for the selenocentric RAE-B.

GEOSTATIONARY AND HIGH-ALTITUDE SCIENTIFIC

This category includes those satellites designed to conduct investigations of the characteristics of near-earth space from orbits with apogees near geostationary altitude and higher. Three of the spacecraft are selenocentric. Communications satellites are not included because NSSDC does not archive such data.

LOW- AND MEDIUM-ALTITUDE SCIENTIFIC

This category includes those spacecraft whose apogees are well below geostationary altitude and whose primary purpose is to conduct investigations in the near-earth environment.

NSSDC/WDC-A-R&S 87-03

DATA CATALOG SERIES FOR SPACE SCIENCE AND APPLICATIONS FLIGHT MISSIONS

Volume 1B

DESCRIPTIONS OF DATA SETS FROM PLANETARY AND HELIOCENTRIC SPACECRAFT AND INVESTIGATIONS

Compiled and Edited by

Richard Horowitz
John E. Jackson
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April 1987

National Space Science Data Center (NSSDC)/
World Data Center A for Rockets and Satellites (WDC-A-R&S)
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

PREFACE

This document is part of a series (see inside front cover) that describes data sets and related spacecraft and investigations from space and earth science flight missions. The series describes the data sets held by the National Space Science Data Center (NSSDC) and some of the data sets held by NASA-funded and other investigators. The series also refers to extensive data sets held and serviced by other Government agencies. This is the second and last volume of the Planetary and Heliocentric Spacecraft and Investigations Catalog. The first volume, issued in 1982, described the spacecraft and investigations along with personnel names and affiliations. This publication describes the data sets associated with the various investigations. As NSSDC is issuing this series, it is working toward remote electronic accessibility of its information files.

We would like to thank the many investigators who have submitted their data for archiving at NSSDC. Their cooperation in supplying supporting information is gratefully acknowledged. We are particularly indebted to the many past and present NSSDC personnel who interacted with the investigators in bringing to NSSDC the flight data and who provided the descriptions appearing in this catalog. Thanks are also extended to the other NSSDC personnel who have been involved in the information handling necessary to produce this volume. Special acknowledgement is given to Patricia Ross for supervising the production of the computerized portion of the catalog and particularly for creating the Region and Discipline Index. Extensive editorial assistance was provided by Mary Elsen and Karen Satin. This catalog was begun by Winifred Cameron and Robert Vostreys. Subsequent contributions were made by Michael Purucker, Paul Butterworth, Susan Kayser, and Raghavingar Parthasarathy. The catalog was brought to completion by the undersigned.

The Data Center is continually striving to increase the usefulness of its data holdings, supporting indexes, and documentation. Scientists are invited to submit their space and earth science data and related documentation to NSSDC. Their comments on and corrections to the present catalog will be greatly appreciated. Catalog recipients are urged to inform potential data users of its availability.

Richard Horowitz
John E. Jackson

April 1987

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Introduction

1. INTRODUCTION

1.1 PURPOSE

The National Space Science Data Center (NSSDC) was established by the National Aeronautics and Space Administration (NASA) to provide data and information from space and earth science flight investigations in support of additional studies beyond those performed as the principal part of any flight mission. This volume is one of a series of 11 that describes (1) the spaceflight investigations for which NSSDC possesses data or can direct people to the data source, (2) all data sets held by NSSDC, (3) some data sets held and serviced by NASA-funded investigators, and (4) some data sets held and serviced by foreign investigators. The series also refers to extensive data sets held and serviced by other Government agencies, particularly the National Oceanographic and Atmospheric Administration (NOAA). There is one major omission from this series: the extensive set of data obtained from the lunar missions conducted by NASA, supplemented by a few small photographic data sets from Soviet missions. These are described in the *Catalog of Lunar Mission Data* (NSSDC/WDC-A-R&S 77-02) and are not repeated in this series.

The series consists of (1) five volumes that describe the spacecraft and their associated investigations separated into various categories, (2) five corresponding volumes that describe investigation data sets and the available orbital information, and (3) a master index volume. The five categories of spacecraft are (i) Planetary and Heliocentric, which includes planetary flybys and probes; (ii) Meteorology and Terrestrial Applications; (iii) Astronomy, Astrophysics, and Solar Physics; (iv) Geostationary and High-Altitude Scientific; and (v) Low- and Medium-Altitude Scientific. It is impossible to provide an organization of categories that separates the investigations cleanly into scientific disciplines, since many missions were multidisciplinary. With the above organization, which is partly discipline-oriented and partly orbit-oriented, it was found that in nearly all cases a given spacecraft belonged clearly to only one of the five categories.

The organization for each volume is described in the Organization Section. The standard description of a data set from an investigation is a free-text brief description, since the wide variety of instruments precludes using a tabular format in most cases.

This catalog series, and the periodic *NSSDC Data Listing* identifying NSSDC data sets very briefly, will be for some time to come the principal off-line sources of information on NSSDC holdings in the disciplines that NSSDC handles. However, NSSDC is bringing its information files to a state of remote electronic accessibility so that users can be confident of easy access to the most current information.

1.2 ORGANIZATION

Volumes 1A and 1B of the NSSDC Data Catalog Series deal with planetary and heliocentric spacecraft that measure properties of the planets in the solar system and that measure the characteristics of interplanetary space. Included are probes that will pass out of the solar system into interstellar space. Volume 1A describes the sources (spacecraft and instruments) of the data sets described in Volume 1B. Volume 1A was organized by planet out from the sun and then by missions that collected interplanetary data. The latter group includes missions that collected interplanetary data only and missions that collected interplanetary data on the way to the planets.

This volume, Volume 1B, is organized differently.[1] The data set descriptions are presented alphabetically by spacecraft common name. Under each spacecraft name, the appropriate investigations are given alphabetically by the name of the principal investigator. Under each investigation heading, the data set descriptions are arranged according to the NSSDC ID.[2]

Data sets added to the NSSDC archives and older data sets extended since January 1, 1984, are identified by an asterisk following the long name of the data set. Whenever the notation N/A appears in the "time span of data" field, it indicates that time span is either not applicable or not available. For data contained on magnetic tapes, the stated characteristics are those of the magnetic tapes that currently hold the corresponding data. If these characteristics are not suitable, the data user should discuss his or her requirements with the NSSDC staff, and NSSDC may be able to provide the same data in a more convenient tape format. Additional information is often available at NSSDC for the data sets, and this information is provided either on request or with the Information Packet that is sent by NSSDC with the requested data. As a general rule, NSSDC does not provide publications that are referenced in the data set descriptions. If the publication of interest is not readily available, such as might be the case for an internal agency report, NSSDC can, in most cases, provide a microfiche of its file copy.

For most of the data sets in this catalog, the corresponding spacecraft ephemeris data are merged with the data from the investigations. In other cases, the ephemeris data must be obtained from a spacecraft data set, i.e., a data set identified by the spacecraft ID followed by the designation 00D, 00E,[3] etc. Spacecraft data sets may contain ephemeris information, or they may provide other spacecraft-related data such as tables showing when the spacecraft was turned on or indexes providing a comprehensive summary of available data. Spacecraft data sets are listed after the spacecraft name and ahead of the investigation data sets.

The Index of Data Sets that follows the Data Set Descriptions section is ordered in the same manner as the data set descriptions. It provides, in effect, a detailed table of contents for the catalog.

A Region and Discipline Index has been provided to help users of this catalog locate data of interest to them more readily. This index should also allow users to work smoothly from the organization of Volume 1A to that of Volume 1B. In this index, the data sets are sorted by planets, proceeding outward from the sun. The interplanetary

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1. The Region and Discipline Index of Volume 1B provides a correlation between Volumes 1A and 1B.

2. The NSSDC ID is an identification code used in the NSSDC information system. In this system, each successfully launched spacecraft and experiment is assigned a code based on the launch sequence of the spacecraft. This code (e.g., 73-085A for the spacecraft Mariner 10) corresponds to the COSPAR international designation. The experiment codes are based on the spacecraft code. For example, the experiments carried aboard the spacecraft 73-085A are numbered 73-085A-01, 73-085A-02, etc. Similarly, data sets corresponding to experiment 73-085A-01 are coded 73-085A-01A, -01B, etc.

3. There are no spacecraft data sets in this catalog with designations 00A, 00B, or 00C because the A, B, C coding corresponds to very specific types of ephemeris data applicable only to earth-orbiting spacecraft. (See Appendix A of Volume 3B for further details).

data are given last as a separate category. In each region (planet or interplanetary), the data sets are sorted further in three major groups of comparable sizes: Imaging; Fields, Particles, and Plasmas; and Other Disciplines. The Other Disciplines category contains a variety of data sets related to experiments performed in subject areas such as atmosphere (neutral and ionized), biology, chemistry, radio science, ultraviolet and infrared radiation, etc. Within each major group, the data are organized alphabetically by spacecraft and principal investigator, and finally by NSSDC ID. The last column of this index is the page number on which the data set brief description appears.

Appendix A is a Listing of Spacecraft by Region Investigated. It provides useful information concerning the missions to each region, including the related spacecraft, with their launch dates, dates of closest approach, and distances at closest approach.

Appendix B is a Chronological Listing of Spacecraft for which data sets are available and described in this catalog. This appendix gives the spacecraft's common name, its launch date, the NSSDC ID, the regions investigated, and the text page number on which descriptions of data sets obtained from the spacecraft begin.

Document Request Forms and Data Request Forms have been provided at the end of this report.

1.3 NSSDC PURPOSE, FACILITIES, AND SERVICES

The National Space Science Data Center was established by the National Aeronautics and Space Administration to provide data and information from space and earth science investigations in support of additional studies beyond those performed by principal investigators. As part of that support, NSSDC has prepared this series of volumes providing descriptions of archived data, divided into five categories as presented in Section 1.1. (See also inside front cover.) In addition to its function of providing selected data and supporting information for further analysis of space science flight experiments, NSSDC produces other publications. Among these are a report on active and planned spacecraft and experiments, and various user's guides.

Virtually all the data available at or through NSSDC result from individual experiments carried on board individual spacecraft. The Data Center has developed an information system utilizing a spacecraft/investigation/data identification hierarchy. This catalog is based on the information contained in that system. The Data Center is initiating an effort to design a new information base, using a relational data base model, to facilitate easy electronic access by remote users. This new information base is intended to describe many more data sets held outside NSSDC than has been the case in the past.

NSSDC provides facilities for reproduction of data and for onsite data use. Resident and visiting researchers are invited to study the data while at the Data Center. The Data Center staff will assist users with additional data searches and with the use of equipment. In addition to spacecraft data, the Data Center maintains some supporting information and other supporting data that may be related to the needs of the researchers.

The services provided by NSSDC are available to any individual or organization residing in the United States and to researchers outside the United States through WDC-A-R&S. Normally a charge is made for the requested data to cover the cost of

processing the request and of reproducing the data. The researcher will be notified of the charge, and payment must be received prior to processing. However, as resources permit, the Director of NSSDC may waive charges for modest amounts of data when they are to be used for scientific studies or for specific educational purposes and when they are requested by an individual affiliated with (1) NASA installations, NASA contractors, or NASA grantees; (2) other U.S. Government agencies, their contractors, or their grantees; (3) universities or colleges; (4) state or local governments; or (5) nonprofit organizations.

Data Request Forms have been provided at the end of this report to facilitate ordering data from NSSDC. A researcher may also obtain data described in this catalog by a letter, a telephone request, an onsite visit, or electronic mail utilizing the Space Physics Analysis Network (SPAN). Anyone who wishes to obtain data for a scientific study should specify the NSSDC ID and the time span (and/or location) of interest. A researcher should also specify why and when the data are needed, the subject of the work, organizational affiliation, and any Government contracts used for performing the study. The Data Center staff is available to help requesters identify data sets for use.

NSSDC would also appreciate receiving copies of all publications resulting from studies in which data supplied by the Data Center have been used. It is further requested that both NSSDC and the original data provider be acknowledged as sources of the data.

Data can be provided in a format or medium other than that used here. For example, magnetic tapes can be reformatted; computer printout or microfilmed listings can be reproduced from magnetic tape; enlarged paper prints can be provided from data on photographic film and microfilm, etc. NSSDC/WDC-A-R&S will provide the requester with an estimate of the response time and, when appropriate, the charge for such requests.

The Data Center's address for information for U.S. researchers follows:

National Space Science Data Center
Code 633.4
Goddard Space Flight Center
Greenbelt, Maryland 20771
Telephone: (301) 286-6695
Telex: 89675 NASCOM GBLT
TWX: 7108289716
SPAN Address: NSSDC::REQUEST

Researchers residing outside the U.S. should direct requests for information to the following address:

World Data Center A for Rockets and Satellites
Code 630.2
Goddard Space Flight Center
Greenbelt, Maryland 20771 U.S.A.
Telephone: (301) 286-6695
Telex: 89675 NASCOM GBLT
TWX: 7108289716
SPAN Address: NSSDC::REQUEST

NSSDC is a node on the Space Physics Analysis Network (SPAN), which can be reached in two ways. Electronic mail can be directed to NSSDC::REQUEST. For access to a menu of information, including the Central Online Data Directory (CODD), and to leave data requests, requesters may log onto the NSSDC node with USERNAME=NSSDC. No password is required. Finally, NSSDC may be reached by Telenet; current procedures are available from the NSSDC Network Hotline (301-286-7251).

1.4 DATA ACQUISITION

NSSDC invites members of the scientific community involved in spaceflight investigations to submit data to the Data Center or to provide information about the data sets that they prefer to make accessible themselves. The Data Center assigns a discipline specialist to work with each investigator or science working team to determine the forms of data that are likely to be most useful to the community of users that obtain data from NSSDC. The pamphlet *Guidelines for Submitting Data to the National Space Science Data Center* can be provided on request.

A different procedure, however, should be followed for archiving planetary data. Under an agreement signed on December 17, 1986, between NSSDC and the Planetary Data System (PDS), an organization recently established by the NASA Solar System Exploration Division, planetary data should now be submitted to NSSDC via the PDS. The PDS will be responsible for validating the data and ensuring that they are properly documented. The PDS can be contacted at:

Planetary Data System
MS 179-112
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91109
Telephone: (818) 354-6347
Telex: 675429
SPAN Address: JPLPDS::TRENFROW

Data Set Descriptions

********** HELIOS-A **********

Data set name - ORBIT ATTITUDE DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-00E, ORBIT ATTITUDE DATA ON MAG TAPE

Time period covered - 12/10/74 TO 05/31/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This 9-track data set was written by an IBM 360 in binary code, at 6250 bpi, in a single file. It provides hourly values of Helios' ecliptic longitude, latitude, sun-Helios distance(AU), earth-Helios distance (AU), earth-Helios-sun angle, Helios-sun-earth angle, heliographic latitude, and velocity components (radial and tangential)(AU/day).

HELIOS-A, FECHTIG
MICROMETEOROID DETECTOR AND ANALYZER

Data set name - MICROMETEOROID IMPACT DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-12A, MICROMETEOROID IMPACT DATA

Time period covered - 12/19/74 TO 01/02/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This 9-track data set was written by a DEC-10 in binary code, at 1600 bpi, in a single file. The file has 438 physical records. Of these, 235 records provide the time intervals when the experiment was active. The remaining 235 records (of 47 words each) describe the 235 micrometeoroid impact events that were registered. Each such record provides the impact time, the sensor number (0 for the ecliptic plane sensor, and 1 for the south sensor), velocity of impact, mass, density, mass-spectrum, and a number of derived orbital characteristics of the micrometeoroid.

HELIOS-A, GURNETT
SOLAR WIND PLASMA WAVE

Data set name - 24-HOUR SURVEY PLOTS ON MICROFILM

NSSDC ID 74-097A-04A, 24-HR SURVEY PLOTS, MFILM

Time period covered - 12/10/74 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 3 REELS OF MICROFILM

This 35-mm microfilm data set provides electric field intensities of plasma waves in the frequency range of 20 Hz-200 kHz, in 16 bands. Each frame covers data for 24 hours. Below the time axis are printed, every 6 hours, the radial distance (AU), ecliptic longitude, sun-earth-Helios angle, and heliographic latitude and longitude of the spacecraft. Interference problems have contributed to data degradation in several of the low frequency bands.

HELIOS-A, GURNETT
FINE FREQUENCY, COARSE TIME RESOLUTION
SPECTRUM ANALYSIS

Data set name - SURVEY PLOTS, ALL FREQUENCIES, 1HZ TO 207KHZ ON MICROFILM

NSSDC ID 74-097A-05A, SURVEY PLOTS,1HZ TO 207KHZ, MFILM

Time period covered - 12/10/74 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 35 REELS OF MICROFILM

This data set contains experimenter-supplied plots on microfilm covering 60 min each. Each plot shows signal strength in decibels from 21 narrow-band channels covering the range 14.2 Hz to 207 kHz, and a broadband channel covering from less than 1 Hz to 210 Hz. The same format is used for both Helios-A and Helios-B, but each data set contains data from only one spacecraft.

HELIOS-A, GURNETT
26.5-KHZ TO 3-MHZ RADIO WAVE

Data set name - LOG ANTENNA TEMPERATURE VS TIME IN 24-HR PLOTS

NSSDC ID 74-097A-06A, LOG ANT TEMP VS TIME,24 HR PLOTS

Time period covered - 12/10/74 TO 04/30/76
(As verified by NSSDC)

Quantity of data - 3 REELS OF MICROFILM

These data, on microfilm supplied by the experimenter, are plots of antenna temperature for each observing frequency. Four frequency plots are displayed on each frame. The plots are presented on a 24-h scale, with year, month, and day indicated at the bottom of each frame. Each point is a 1-min average.

Data set name - 10-MINUTE AVERAGE SUMMARY DATA ON TAPE

NSSDC ID 74-097A-06B, LOG ANT TEMP VS TIME ON TAPE

Time period covered - 12/13/74 TO 04/25/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These 10-minute averaged summary data are on magnetic tape created on an IBM 360/91 computer at 6250-bpi, 9-track, binary. Each physical block contains 61 logical records of 520 bytes (130 real words). The logical records each contain time in year, month, day, and millisecond of day; frequency channel zero count; number of non-zero points of the frequency in the 10-min interval; 2% minimum and maximum of the points from the value of 10* log T calibrated; mode (most frequently found) and median of value of 10* log T calibrated; and 100* log (sigma T) linear sum. These calculations are repeated for 16 channels within the logical record.

Data set name - LOG ANTENNA TEMPERATURE MONTHLY PLOTS ON MICROFILM

NSSDC ID 74-097A-06C, LOG ANT TEMP,MONTHLY PLOTS

Time period covered - 12/10/74 TO 04/30/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data, on microfilm supplied by the experimenter, are plots of antenna temperature for each observing frequency. Four frequency plots are displayed on each frame. The plots are presented on a 24-h scale, with year, month, and day indicated at the bottom of each frame. Each point is a 10-min average.

HELIOS-A, KEPPLER
ENERGETIC ELECTRON AND PROTON DETECTOR

Data set name - HOURLY AVERAGED ELECTRON-PROTON DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-10A, HOURLY AVERAGED ELECTRON-PROTON

Time period covered - 12/10/74 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These 9-track tapes were written by PDP 11/40 in binary code, at 1600 bpi. Each tape has a single file, blocked in 4464 bytes. Each block contains four 1-hr averages. Electron as well as proton averages pertain to 16 sectors in the ecliptic plane, with sector 1 pointing to the sun. For each sector, the electron data pertain to 15 energy channels, spanning the total range of 17-835 keV, plus a channel that counts electrons of energy greater than 835 keV. Likewise, for protons, 15 channels cover the total range of 21-677 keV; the 16th channel counts protons of E>677 keV.

HELIOS-A, KUNOW
COSMIC-RAY PARTICLES

Data set name - HOURLY AVERAGED COUNT RATE DATA MAGNETIC TAPE (*)

NSSDC ID 74-097A-07A, HOURLY AVG COUNT RATE DATA

Time period covered - 12/11/74 TO 12/31/83
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set contains hourly averaged fluxes of electrons, protons, and alpha particles in the MeV range. The 9-track tapes were written by PDP 11/45, in ASCII. Tapes written at 800 bpi as well as those written at 1600 bpi are available. Each tape has a single file, and each record contains 10 hourly averages. The differential fluxes (particles/sq.m, s, sr, MeV) cover, in several bands, the energy range 0.3-2.0 MeV for electrons, 4.0-51 MeV for protons, and 2.0-48 MeV for alpha particles. Also provided are the integral fluxes of alphas above 48 MeV, and protons above 51 MeV. For some of the energy channels, the standard deviations of the averages are also provided. Each file is preceded by a header record, providing the start and stop times of the data in the file.

HELIOS-A, LEINERT
ZODIACAL LIGHT PHOTOMETER

Data set name - REDUCED DATA ON MAGNETIC TAPE
(*)

NSSDC ID 74-097A-11A, REDUCED DATA TAPE

Time period covered - 12/11/74 TO 02/18/85
(As verified by NSSDC)

Quantity of data - 72 REELS OF TAPE

These 9-track tapes were written by PDP/10, in binary code, at 1600 bpi. Each tape is multifiled, and contains one month of data. The reduced data are not corrected for star light or plasma scattered light. The first file in each tape is a tape header file; the file contains, also, in sequence all the measurement cycle header blocks. These blocks provide information about the status/health of the instruments, calibration, etc., for all the science data blocks in the tape. This tape header file is followed by a series of individual files, each providing science data. The file structure is as follows: The first block is a measurement cycle header. (It is a repeat of the item in the tape header file.) The second block provides house keeping information, mainly the average temperatures of the sensors. The third block provides the reduced science data: Stokes parameters (Q) in Ultra-violet, Blue, and Visible lights (U,B,V), polarization angles, Stokes parameters (U), polarized intensities, total intensities, degree of polarization, again in the U, B, and V bands. The final, 4th block provides a number of coordinate values and velocity components of the spacecraft and some planets, angles such as earth-Helios-sun angle, aspect angles of some planets, etc.

Data set name - ZODIACAL LIGHT DATA ON MAGNETIC TAPE
(*)

NSSDC ID 74-097A-11B, ZODIACAL LIGHT DATA ON TAPE

Time period covered - 12/11/74 TO 02/18/85
(As verified by NSSDC)

Quantity of data - 72 REELS OF TAPE

These tapes are further processed versions of the data set 74-097A-11A, and the science data accounts away the contributions of star light, and plasma-scattered light. They are written by a PDP/10, in binary code, at 1600 bpi. Each tape is multifiled, and contains one month of data. The first file in each tape is a tape header file; but it also includes in sequence all the measurement cycle header blocks. These blocks provide information about the status/health of the instruments, calibration, etc., for all the science data blocks in the tape. This file is followed by a series of files, each providing science data. The file structure is as follows: The first block is the measurement cycle header for that file. (It is a repeat of the item contained in the tape header file.) The second block provides house keeping information, mainly the average temperatures of the sensors. The third block provides the science data: Stokes parameters (Q) in Ultra-violet, Blue, and Visible lights (U,B,V), polarization angles, Stokes parameters (U), polarized intensities, degrees of polarization, again in the U, B, V bands. In addition to these, the science block includes the above parameters for the actual Zodiacal light, after subtracting out the contaminants, star light and plasma-scattered light. The final, fourth block provides a number of coordinate values and velocity components of the spacecraft and some planets, angles such as earth-Helios-sun angle, aspect angles of some planets, etc.

HELIOS-A, NESS
FLUXGATE MAGNETOMETER FOR AVERAGE FIELDS

Data set name - HOURLY AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-02A, HOURLY AVERAGED MAGNETIC FIELD

Time period covered - 12/14/74 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was written by an IBM-360, on 9-track tapes, in binary code and at 6250 bpi. Each tape has two files, with block size of 32 kilobytes. The first file contains a table describing the symbols of the data on the tape. The second file gives the hourly averaged magnetic field data. The field components XSE, YSE, and ZSE pertain to the solar ecliptic cartesian system. It also provides the magnitude of the average field, its standard deviation, the elevation angle of the field vector above the ecliptic plane, and the longitude of the ecliptic plane projection of the field. The longitude angle PHI = 0, implies that the projection is along X-axis; PHI = 90 implies that it is along Y-axis. ASCII version of each tape is also available at the NSSDC.

HELIOS-A, NEUBAUER
FLUXGATE MAGNETOMETER FOR FIELD FLUCTUATIONS

Data set name - 8 SECOND AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-01A, 8 SEC AVG MAG FIELD VECTOR DATA

Time period covered - 12/10/74 TO 04/30/76
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set was written by a PDP computer on 9-track tapes, in binary code and at 1600 bpi. It provides 8-s average values of the solar ecliptic X, Y, Z components of the magnetic field, in units of centi-gamma. Also available are the number of samples of each component used in the averaging. The location of the spacecraft is specified in terms of ecliptic longitude, heliographic latitude, and radial distance from sun. Data quality flags are also included.

Data set name - HOURLY AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-01B, HOURLY AVG MAG FIELD VECTOR DATA

Time period covered - 12/10/74 TO 06/30/79
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set was written by a HP-3000 computer on 9-track tapes, in binary code and at 1600 bpi. Each logical record is 237 bytes long. It provides 1-hr average values of the solar-ecliptic X, Y, Z components of the magnetic field, in units of centi-gamma. Also available are the number of samples of each component in the averaging. The location of the spacecraft is specified in terms of ecliptic longitude, heliographic latitude, and radial distance from sun. Data quality flags are also included.

Data set name - MERGED HOURLY AVERAGED FIELD AND PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-01C, MERGED HOURLY AVGD FIELD + PLASMA

Time period covered - 12/10/74 TO 12/29/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These merged hourly-averaged magnetic field and plasma data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The first file consists of ASCII card images describing the data files. Each 30-word data record contains spacecraft identification; data code (1=plasma data only, 2=magnetometer data only, and 3=both); year, day, and hour of the data interval; cumulative day and fractional day since January 1, 1972; spacecraft heliocentric distance (AU); Carrington rotation number and longitude of the subspacecraft point; earth-sun-spacecraft separation angle; components of the interplanetary magnetic field; magnitude of the interplanetary magnetic field vector; standard deviation; solar wind bulk flow speed; radial component of the proton temperature; solar wind number density; standard deviation of bulk flow speed, proton temperature, and proton number density; proton flow elevation angle and azimuth angle; elevation and azimuth angles of the magnetic field vector in the solar ecliptic coordinate system;

and the cumulative word count.

Data set name - 1-HOUR AVERAGE PLOTS, PLASMA AND MAGNETIC DATA MERGED

NSSDC ID 74-097A-01D, 1-H AVE PLOT, PLASMA + MAG MERGED

Time period covered - 12/10/74 TO 12/29/80
(As verified by NSSDC)

Quantity of data - 14 COLOR SLIDES

This data set consists of color plots of 1-h averages of solar wind and IMF (interplanetary magnetic field) parameters. The plots were made from data sets 74-097A-01C, 74-097A-09B, 76-003A-01C, and 76-003A-09B, which consist of a simplified format tape containing the merged solar wind plasma and magnetic field data from Helios A and B. The original data from which these merged tapes were made were provided by Rainer Schwenn and H. Rosenbauer (plasma) and F. Neubauer (magnetic field). Also included in this data set are derived parameters, such as energy flux and beta, obtained from algorithms prepared by J. W. Freeman at NSSDC. The pixels making up each plot are color coded to indicate the magnitude of each solar wind or IMF parameter, with only one parameter shown on each plot. The pixels are located on a grid of Carrington rotation number versus Carrington longitude of the subspacecraft point. Thus time progresses from right to left on a line, and from the top to the bottom of the picture. In this manner, approximately 6 years of data may be displayed on one plot. The resulting plots are easy to read, and rapid identification of features such as high speed streams, shocks, and sector boundaries is possible. Parameters displayed are solar wind bulk flow speed, radial component of proton temperature, proton number density, proton energy density (including flow and thermal energy), solar wind energy flux, rectangular components of the IMF in solar ecliptic coordinates, magnitude of the IMF, energy density of the IMF, beta (ratio of proton thermal energy density to IMF magnetic energy density), and the Mach number (ratio of the solar wind bulk flow speed to the Alfven velocity). The data are available as color prints or as 35-mm color slides. This data set is identically listed under identification numbers 74-097A-01D, 74-097A-09C, 76-003A-01D, and 76-003A-09C.

HELIOS-A, NEUBAUER
SEARCH COIL MAGNETOMETER

Data set name - 8 SECOND AVERAGED SPECTRAL DENSITY, 8 CHANNEL, 6.8-1470 HZ DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-03A, 8-S AVG SPECT DEN 8 CHAN 6.8-1470

Time period covered - 12/10/74 TO 09/20/75
(As verified by NSSDC)

Quantity of data - 9 REELS OF TAPE

This data set in written by a POP on 9-track tapes, in binary code and at 1600 bpi. Each tape has a single file. The records are of different lengths. The first record is a header. It is followed by pairs of records: the first provides the day number and its fraction; the second provides several 8-s averaged values of the amplitude and peak values encountered during the 8-s interval, of the magnetic field components in 8 frequency bands. These bands are centered at 6.8, 14.7, 31.6, 68, 147, 316, 681, and 1470 Hz, and have widths +/- 50% of the frequencies. The Z-component amplitude is taken in the direction of the spin axis, and the X-component from one of the equatorial plane antennas. Among other entries are the ecliptic longitude, latitude, and heliographic latitude of the spacecraft, and the Helios-sun-earth angle. Quality flags are also proviced.

HELIOS-A, ROSENBAUER
PLASMA DETECTORS

Data set name - HOURLY AVERAGED PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-09A, HOURLY AVG. PLASMA DATA

Time period covered - 12/12/74 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These 9-track tapes of solar wind plasma data were written by IBM-360, in binary code and at 1600 bpi, in a single file per tape, blocked into 8000 bytes; each block contains 100 logical records, and each record has 20 words. These words include time, earth-sun-Helios angle, sun-Helios distance (AU), Carrington longitude of Helios, solar-ecliptic latitude, Carrington rotation number, proton bulk speed, temperature, number density, flow angles of ecliptic elevation and azimuth, standard deviations of the plasma parameters, and the number of data points in the hourly averages.

Data set name - MERGED HOURLY AVERAGED FIELD AND PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 74-097A-09B, MERGED HOURLY AVGD FIELD + PLASMA

Time period covered - 12/10/74 TO 12/29/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These merged hourly averaged magnetic field and plasma data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The first file consists of ASCII card images describing the data files. Each 30-word data record contains spacecraft identification; data code (1=plasma data only, 2=magnetometer data only, and 3=both); year, day, and hour of the data interval; cumulative day and fractional day since January 1, 1972; spacecraft heliocentric distance (AU); Carrington rotation number and longitude of the subspacecraft point; earth-sun-spacecraft separation angle; components of the interplanetary magnetic field; magnitude of the interplanetary magnetic field vector; standard deviation; solar wind bulk flow speed; radial component of the proton temperature; solar wind number density; standard deviation of bulk flow speed; proton temperature, and proton number density; proton flow elevation angle and azimuth angle; elevation and azimuth angles of the magnetic field vector in the solar ecliptic coordinate system; and the cumulative word count.

Data set name - 1-HOUR AVERAGE PLOTS, PLASMA AND MAGNETIC DATA MERGED

NSSDC ID 74-097A-09C, 1-H AVE PLOT, PLASMA + MAG MERGED

Time period covered - 12/10/74 TO 12/29/80
(As verified by NSSDC)

Quantity of data - 14 COLOR SLIDES

This data set consists of color plots of 1-h averages of solar wind and IMF (interplanetary magnetic field) parameters. The plots were made from data sets 74-097A-01C, 74-097A-09B, 76-003A-01C, and 76-003A-09B, which consist of a simplified format tape containing the merged solar wind plasma and magnetic field data from Helios A and B. The original data from which these merged tapes were made were provided by Rainer Schwenn and H. Rosenbauer (plasma) and F. Neubauer (magnetic field). Also included in this data set are derived parameters, such as energy flux and beta, obtained from algorithms prepared by J. W. Freeman at NSSDC. The pixels making up each plot are color coded to indicate the magnitude of each solar wind or IMF parameter, with only one parameter shown on each plot. The pixels are located on a grid of Carrington rotation number versus Carrington longitude of the subspacecraft point. Thus time progresses from right to left on a line, and from the top to the bottom of the picture. In this manner, approximately 6 years of data may be displayed on one plot. The resulting plots are easy to read, and rapid identification of features such as high speed streams, shocks, and sector boundaries is possible. Parameters displayed are solar wind bulk flow speed, radial component of proton temperature, proton number density, proton energy density (including flow and thermal energy), solar wind energy flux, rectangular components of the IMF in solar ecliptic coordinates, magnitude of the IMF, energy density of the IMF, beta (ratio of proton thermal energy density to IMF magnetic energy density), and the Mach number (ratio of the solar wind bulk flow speed to the Alfven velocity). The data are available as color prints or as 35-mm color slides. This data set is identically listed under identification numbers 74-097A-01D, 74-097A-09C, 76-003A-01D, and 76-003A-09C.

HELIOS-A, TRAINOR
GALACTIC AND SOLAR COSMIC RAYS

Data set name - SECTORED X-RAY PLOTS ON MICROFILM (*)

NSSDC ID 74-097A-08A, SECTORED X-RAY PLOTS, MFILM

Time period covered - 12/17/74 TO 02/12/84
(As verified by NSSDC)

Quantity of data - 15 REELS OF MICROFILM

This data set consists of sectored X-ray plots on microfilm submitted by the experimenter. The sectored X-ray plot contains counts per second on an every-readout basis. Each frame covers a 5-h timespan, and each point is an average of one set of eight sectors. On the bottom of the plot is a ranking table, with the three most intense directions indicated such that the most intense sector is placed on top. The time

on the plot consists of the spacecraft event time associated with the readout of the first sector. The second time is a correction for one-way light time to the sun and represents the event time at the sun. The spacecraft position in ecliptic coordinates is given at the top of each frame. The name of the spacecraft is also given at the top of the frame.

Data set name - HOURLY AVERAGED FLUXES OF PROTONS DATA ON MAGNETIC TAPE (*)

NSSDC ID 74-097A-08B, HOURLY AVERAGED FLUXES OF PROTONS

Time period covered - 12/15/74 TO 02/12/84
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These hourly averaged proton flux data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The variable length data records each contain about 5 days worth of data. Each contains a count of the number of hourly intervals in the record; number of physical quantities in the record (3); six 132-character lines identifying the physical quantities (fluxes) contained in the record; time in year, month, day of month, h, min and si values of proton fluxes in energy bins from 3.3 to 21.6 MeV, 21.6 to 57.0 MeV, and above 57.0 MeV; and statistical errors associated with the fluxes.

********** HELIOS-B **********

Data set name - ORBIT ATTITUDE DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-00D, ORBIT ATTITUDE DATA ON MAG TAPE

Time period covered - 01/15/76 TO 03/31/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This 9-track data set was written by an IBM 360 in binary code, at 6250 bpi, in a single file. It provides hourly values of Helios' ecliptic longitude, latitude, sun-Helios distance(AU), earth-Helios distance (AU), earth-Helios-sun angle, Helios-sun-earth angle, heliographic latitude, and velocity components (radial and tangential(AU/day).

HELIOS-B, GURNETT
SOLAR WIND PLASMA WAVE

Data set name - 24-HOUR SURVEY PLOTS ON MICROFILM

NSSDC ID 76-003A-04A, 24-HR SURVEY PLOTS, MFILM

Time period covered - 01/19/76 TO 03/08/80
(As verified by NSSDC)

Quantity of data - 5 REELS OF MICROFILM

This 35-mm microfilm data set provides electric field intensities of plasma waves in the frequency range of 20 Hz-200 kHz, in 16 bands. Each frame covers data for 24 hours. Below the time axis are printed, every 6 hours, the radial distance (AU), ecliptic longitude, sun-earth-Helios angle, and heliographic latitude and longitude of the spacecraft. Interference problems have contributed to data degradation in several of the low frequency bands.

HELIOS-B, GURNETT
FINE FREQUENCY, COARSE TIME RESOLUTION
SPECTRUM ANALYSIS

Data set name - SURVEY PLOTS, ALL FREQUENCIES, 1HZ TO 207KHZ ON MICROFILM

NSSDC ID 76-003A-05A, SURVEY PLOTS, 1HZ TO 207KHZ,MFILM

Time period covered - 01/15/76 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 20 REELS OF MICROFILM

This data set contains plots on microfilm, supplied by the experimenter, covering 60 min each. Each plot shows signal strength in decibels from 21 narrow-band channels covering the range 14.2 Hz to 207 kHz, and a broadband channel covering from less than 1 Hz to 210 Hz. The same format is used for both Helios-A and Helios-B, but each data set contains data from only one spacecraft.

HELIOS-B, GURNETT
26.5-KHZ TO 3-MHZ RADIO WAVE

Data set name - LOG ANTENNA TEMPERATURE VERSUS TIME IN 24 HOUR PLOTS

NSSDC ID 76-003A-06A, LOG ANT TEMP VS TIME,24 HR PLOTS

Time period covered - 01/23/76 TO 10/31/77
(As verified by NSSDC)

Quantity of data - 3 REELS OF MICROFILM

These data, on microfilm supplied by the experimenter, are plots of antenna temperature for each observing frequency. Four frequency plots are displayed on each frame. The plots are presented on a 24-h scale, with year, month, and day indicated at the bottom of each frame. Each point is a 1-min average.

Data set name - 10-MINUTE AVERAGE SUMMARY DATA ON TAPE

NSSDC ID 76-003A-06B, LOG ANT TEMP VS TIME ON TAPE

Time period covered - 02/02/76 TO 10/31/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These 10-minute averaged summary data are on magnetic tape created on an IBM 360/91 computer at 6250-bpi, 9-track, binary. Each physical block contains 61 logical records of 520 bytes (130 real words). The logical records each contain time in year, month, day, and ms of day; frequency channel zero count; number of non-zero points of the frequency in the 10-min interval; 2% minimum and maximum of the points from the value of 10^{*} log T calibrated; mode (most frequently found) and median of value of 10^{*} log T calibrated; and 100^{*} log (sigma T) linear sum. These calculations are repeated for 16 channels within the logical record.

Data set name - LOG ANTENNA TEMPERATURE MONTHLY PLOTS ON MICROFILM

NSSDC ID 76-003A-06C, LOG ANT TEMP,MONTHLY PLOTS

Time period covered - 11/01/76 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data, on microfilm supplied by the experimenter, are plots of antenna temperature for each observing frequency. Four frequency plots are displayed on each frame. The plots are presented on a 24-h scale, with year, month, and day indicated at the bottom of each frame. Each point is a 10-min average.

HELIOS-B, KEPPLER
ENERGETIC ELECTRON AND PROTON DETECTOR

Data set name - HOURLY AVERAGED ELECTRON-PROTON DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-10A, HOURLY AVERAGED ELECTRON-PROTON

Time period covered - 01/15/76 TO 03/08/80
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

These 9-track tapes were written by PDP 11/40 in binary code, at 1600 bpi. Each tape has a single file, blocked in 4464 bytes. Each block contains four 1-hr averages. Electron as well as proton averages pertain to 16 sectors in the ecliptic plane, with sector 1 pointing to the sun. For each sector, the electron data pertain to 15 energy channels, spanning the total range of 17-835 keV, plus a channel that counts electrons of energy greater than 835 keV. Likewise, for protons, 15 channels cover the total range of 21-677 keV; the 16th channel counts protons of E>677 keV.

HELIOS-B, KUNOW
COSMIC-RAY PARTICLES

Data set name - HOURLY AVERAGED COUNT RATE DATA ON MAGNETIC TAPE (*)

NSSDC ID 76-003A-07A, HOURLY AVG COUNT RATE DATA

Time period covered - 01/16/76 TO 03/08/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set contains hourly averaged fluxes of electrons, protons, and alpha particles in the MeV range. The 9-track tapes were written by PDP 11/45, in ASCII. Tapes written at 800 bpi as well as those written at 1600 bpi are available. Each tape has a single file, and each record contains 10 hourly averages. The differential fluxes (particles/sq.m, s, sr, MeV) cover, in several bands, the energy range 0.3-2.0 MeV for electrons, 4.0-51 MeV for protons, and 2.0-48 MeV for alpha particles. Also provided are the integral fluxes of alphas above 48 MeV, and protons above 51 MeV. For some of the energy channels, the standard deviations of the averages are also provided. Each file is preceded by a header record, providing the start and stop times of the data in the file.

HELIOS-B, LEINERT
ZODIACAL LIGHT PHOTOMETER

Data set name - REDUCED DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-11A, REDUCED DATA TAPE

Time period covered - 01/17/76 TO 12/22/79
(As verified by NSSDC)

Quantity of data - 37 REELS OF TAPE

These 9-track tapes were written by PDP/10, in binary code, at 1600 bpi. Each tape is multifiled, and contains one month of data. The reduced data are not corrected for star light or plasma scattered light. The first file in each tape is a tape header file; the file contains, also, in sequence all the measurement cycle header blocks. These blocks provide information about the status/health of the instruments, calibration, etc., for all the science data blocks in the tape. This tape header file is followed by a series of individual files, each providing science data. The file structure is as follows: The first block is a measurement cycle header. (It is a repeat of the item in the tape header file.) The second block provides house keeping information, mainly the average temperatures of the sensors. The third block provides the reduced science data: Stokes parameters (Q) in Ultra-violet, Blue, and Visible lights (U,B,V), polarization angles, Stokes parameters (U), polarized intensities, total intensities, degree of polarization, again in the U, B, and V bands. The final, 4th block provides a number of coordinate values and velocity components of the spacecraft and some planets, angles such as earth-Helios-sun angle, aspect angles of some planets, etc.

Data set name - ZODICAL-LIGHT DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-11B, ZODIACAL LIGHT DATA

Time period covered - 01/01/76 TO 12/23/79
(As verified by NSSDC)

Quantity of data - 37 REELS OF TAPE

These tapes are further processed versions of the data set 74-097A-11A, and the science data accounts away the contributions of star light, and plasma-scattered light. They are written by a PDP/10, in binary code, at 1600 bpi. Each tape is multifiled, and contains one month of data. The first file in each tape is a tape header file; but it also includes in sequence all the measurement cycle header blocks. These blocks provide information about the status/health of the instruments, calibration, etc., for all the science data blocks in the tape. This file is followed by a series of files, each providing science data. The file structure is as follows: The first block is the measurement cycle header for that file. (It is a repeat of the item contained in the tape header file.) The second block provides house keeping information, mainly the average temperatures of the sensors. The third block provides the science data: Stokes parameters (Q) in Ultra-violet, Blue, and Visible lights (U,B,V), polarization angles, Stokes parameters (U), polarized intensities, degrees of polarization, again in the U, B, V bands. In addition to these, the science block includes the above parameters for the actual Zodiacal light, after subtracting out the contaminants, star light and plasma-scattered light. The final, fourth block provides a number of coordinate values and velocity components of the spacecraft and some planets, angles such as earth-Helios-sun angle, aspect angles of some planets, etc.

HELIOS-B, NESS
FLUXGATE MAGNETOMETER FOR AVERAGE FIELDS

Data set name - HOURLY AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-02A, HOURLY AVERAGED MAGNETIC FIELD

Time period covered - 01/17/76 TO 12/31/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was written by an IBM-360, on 9-track tapes, in binary code and at 6250 bpi. Each tape has two files, with block size of 32 kilobytes. The first file contains a table describing the symbols of the data on the tape. The second file gives the hourly averaged magnetic field data. The field components XSE, YSE, and ZSE pertain to the solar ecliptic cartesian system. It also provides the magnitude of the average field, its standard deviation, the elevation angle of the field vector above the ecliptic plane, and the longitude of the ecliptic plane projection of the field. The longitude angle PHI = 0, implies that the projection is along X-axis; PHI = 90 implies that it is along Y-axis. ASCII version of each tape is also available at the NSSDC.

HELIOS-B, NEUBAUER
FLUXGATE MAGNETOMETER FOR FIELD FLUCTUATIONS

Data set name - HOURLY AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-01A, HOURLY AVG MAG FIELD VECTOR DATA

Time period covered - 01/15/76 TO 06/26/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was written by a HP-3000 computer on 9-track tapes, in binary code and at 1600 bpi. Each logical record is 237 bytes long. It provides 1-hr average values of the solar-ecliptic X, Y, Z components of the magnetic field, in units of centi-gamma. Also available are the number of samples of each component in the averaging. The location of the spacecraft is specified in terms of ecliptic longitude, heliographic latitude, and radial distance from sun. Data quality flags are also included.

Data set name - 8 SECOND AVERAGED MAGNETIC FIELD VECTOR DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-01B, 8 SEC AVG MAG FIELD VECTOR DATA

Time period covered - 01/15/76 TO 04/30/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was written by a PDP computer on 9-track tapes, in binary code and at 1600 bpi. It provides 8-s average values of the solar ecliptic X, Y, Z components of the magnetic field, in units of centi-gamma. Also available are the number of samples of each component used in the averaging. The location of the spacecraft is specified in terms of ecliptic longitude, heliographic latitude, and radial distance from sun. Data quality flags are also included.

Data set name - MERGED HOURLY AVERAGED FIELD AND PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-01C, MERGED HOURLY AVGD FIELD + PLASMA

Time period covered - 01/15/76 TO 03/04/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These merged hourly averaged magnetic field and plasma data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The first file consists of ASCII card images describing the data files. Each 30-word data record contains spacecraft identification; data code (1 = plasma data only, 2 = magnetometer data only, and 3 = both); year, day, and hour of the data interval; cumulative day and fractional day since January 1, 1972; spacecraft heliocentric distance (AU); Carrington rotation number and longitude of the subspacecraft point; earth-sun-spacecraft separation angle; components of the interplanetary magnetic field; magnitude of the interplanetary magnetic field vector; standard deviation; solar wind bulk flow speed; radial component of the proton temperature; solar wind number density; standard deviation of bulk flow speed, proton temperature, and proton number density; proton flow elevation angle and azimuth angle; elevation and azimuth angles of the magnetic field vector in the solar ecliptic coordinate system.

and the cumulative word count.

Data set name - 1-HOUR AVERAGE PLOTS, PLASMA AND MAGNETIC DATA MERGED

NSSDC ID 76-003A-01D, 1-H AVE PLOT, PLASMA + MAG MERGED

Time period covered - 01/15/76 TO 03/04/80
(As verified by NSSDC)

Quantity of data - 14 COLOR SLIDES

This data set consists of color plots of 1-h averages of solar wind and IMF (interplanetary magnetic field) parameters. The plots were made from data sets 74-097A-01C, 74-097A-09B, 76-003A-01C, and 76-003A-09B, which consist of a simplified format tape containing the merged solar wind plasma and magnetic field data from Helios A and B. The original data from which these merged tapes were made were provided by Rainer Schwenn and H. Rosenbauer (plasma) and F. Neubauer (magnetic field). Also included in this data set are derived parameters, such as energy flux and beta, obtained from algorithms prepared by J. W. Freeman at NSSDC. The pixels making up each plot are color coded to indicate the magnitude of each solar wind or IMF parameter, with only one parameter shown on each plot. The pixels are located on a grid of Carrington rotation number versus Carrington longitude of the subspacecraft point. Thus time progresses from right to left on a line, and from the top to the bottom of the picture. In this manner, approximately 6 years of data may be displayed on one plot. The resulting plots are easy to read, and rapid identification of features such as high speed streams, shocks, and sector boundaries is possible. Parameters displayed are solar wind bulk flow speed, radial component of proton temperature, proton number density, proton energy density (including flow and thermal energy), solar wind energy flux, rectangular components of the IMF in solar ecliptic coordinates, magnitude of the IMF, energy density of the IMF, beta (ratio of proton thermal energy density to IMF magnetic energy density), and the Mach number (ratio of the solar wind bulk flow speed to the Alfven velocity). The data are available as color prints or as 35-mm color slides. This data set is identically listed under identification numbers 74-097A-01D, 74-097A-09C, 76-003A-01D, and 76-003A-09C.

HELIOS-B, NEUBAUER
SEARCH COIL MAGNETOMETER

Data set name - 8-SECOND AVERAGED SPECTRAL DENSITY 8 CHANNEL 6.8-1470 HZ DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-03A, 8-S AVG SPT DEN 8 CHAN 6.8-1470HZ

Time period covered - 01/15/76 TO 11/21/76
(As verified by NSSDC)

Quantity of data - 9 REELS OF TAPE

This data set in written by a PDP on 9-track tapes, in binary code and at 1600 bpi. Each tape has a single file. The records are of different lengths. The first record is a header. It is followed by pairs of records: the first provides the day number and its fraction; the second provides several 8-s averaged values of the amplitude and peak values encountered during the 8-s interval, of the magnetic field components in 8 frequency bands. These bands are centered at 6.8, 14.7, 31.6, 68, 147, 316, 681, and 1470 Hz, and have widths +/- 50% of the frequencies. The Z-component amplitude is taken in the direction of the spin axis, and the X-component from one of the equatorial plane antennas. Among other entries are the ecliptic longitude, latitude, and heliographic latitude of the spacecraft, and the Helios-sun-earth angle. Quality flags are also provided.

HELIOS-B, ROSENBAUER
PLASMA DETECTORS

Data set name - HOURLY AVERAGED PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-09A, HOURLY AVG. PLASMA DATA

Time period covered - 01/17/76 TO 03/08/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These 9-track tapes of solar wind plasma data were written by IBM-360, in binary code and at 1600 bpi, in a single file per tape, blocked into 8000 bytes; each block contains 100 logical records, and each record has 20 words. These words include time, earth-sun-Helios angle, sun-Helios distance (AU), Carrington longitude of Helios, solar-ecliptic latitude, Carrington rotation number, proton bulk speed, temperature, number density, flow angles of ecliptic elevation and azimuth, standard deviations of the plasma parameters, and the number of data points in the hourly averages.

Data set name - MERGED HOURLY AVERAGED FIELD AND PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-09B, MERGED HOURLY AVGD FIELD + PLASMA

Time period covered - 01/15/76 TO 03/04/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These merged hourly averaged magnetic field and plasma data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The first file consists of ASCII card images describing the data files. Each 30-word data record contains spacecraft identification; data code (1 = plasma data only, 2 = magnetometer data only, and 3 = both); year, day, and hour of the data interval; cumulative day and fractional day since January 1, 1972; spacecraft heliocentric distance (AU); Carrington rotation number and longitude of the subspacecraft point; earth-sun-spacecraft separation angle; components of the interplanetary magnetic field; magnitude of the interplanetary magnetic field vector; standard deviation; solar wind bulk flow speed; radial component of the proton temperature; solar wind number density; standard deviation of bulk flow speed, proton temperature, and proton number density; proton flow elevation angle and azimuth angle; elevation and azimuth angles of the magnetic field vector in the solar ecliptic coordinate system; and the cumulative word count.

Data set name - 1-HOUR AVERAGE PLOTS, PLASMA AND MAGNETIC DATA MERGED

NSSDC ID 76-003A-09C, 1-H AVE PLOT, PLASMA + MAG MERGED

Time period covered - 01/15/76 TO 03/04/80
(As verified by NSSDC)

Quantity of data - 14 COLOR SLIDES

This data set consists of color plots of 1-h averages of solar wind and IMF (interplanetary magnetic field) parameters. The plots were made from data sets 74-097A-01C, 74-097A-09B, 76-003A-01C, and 76-003A-09B, which consist of a simplified format tape containing the merged solar wind plasma and magnetic field data from Helios A and B. The original data from which these merged tapes were made were provided by Rainer Schwenn and H. Rosenbauer (plasma) and F. Neubauer (magnetic field). Also included in this data set are derived parameters, such as energy flux and beta, obtained from algorithms prepared by J. W. Freeman at NSSDC. The pixels making up each plot are color coded to indicate the magnitude of each solar wind or IMF parameter, with only one parameter shown on each plot. The pixels are located on a grid of Carrington rotation number versus Carrington longitude of the subspacecraft point. Thus time progresses from right to left on a line, and from the top to the bottom of the picture. In this manner, approximately 6 years of data may be displayed on one plot. The resulting plots are easy to read, and rapid identification of features such as high speed streams, shocks, and sector boundaries is possible. Parameters displayed are solar wind bulk flow speed, radial component of proton temperature, proton number density, proton energy density (including flow and thermal energy), solar wind energy flux, rectangular components of the IMF in solar ecliptic coordinates, magnitude of the IMF, energy density of the IMF, beta (ratio of proton thermal energy density to IMF magnetic energy density), and the Mach number (ratio of the solar wind bulk flow speed to the Alfven velocity). The data are available as color prints or as 35-mm color slides. This data set is identically listed under identification numbers 74-097A-01D, 74-097A-09C, 76-003A-01D, and 76-003A-09C.

HELIOS-B, TRAINOR
GALACTIC AND SOLAR COSMIC RAYS

Data set name - SECTORED X-RAY PLOTS ON MICROFILM

NSSDC ID 76-003A-08A, SECTORED X-RAY PLOTS, MFILM

Time period covered - 01/19/76 TO 12/23/79
(As verified by NSSDC)

Quantity of data - 8 REELS OF MICROFILM

This data set consists of sectored X-ray plots on microfilm submitted by the experimenter. The sectored X-ray plot contains counts per second on an every-readout basis. Each frame covers a 5-h timespan and each point is an average of one set of eight sectors. On the bottom of the plot is a ranking table, with the three most intense directions indicated such that the most intense sector is placed on top. The time

on the plot consists of the spacecraft event time associated with the readout of the first sector. The second time is a correction for one-way light time to the sun and represents the event time at the sun. The spacecraft position in ecliptic coordinates is given at the top of each frame. The name of the spacecraft is also given at the top of the frame.

Data set name - HOURLY AVERAGED FLUXES OF PROTONS DATA ON MAGNETIC TAPE

NSSDC ID 76-003A-08B, HOURLY AVERAGED FLUXES OF PROTONS

Time period covered - 01/18/76 TO 03/07/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These hourly averaged proton flux data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. The variable length data records each contain about 5 days worth of data. Each contains a count of the number of hourly intervals in the record; number of physical quantities in the record (3); six 132-character lines identifying the physical quantities (fluxes) contained in the record; time in year, month, day of month, h, min and s, values of proton fluxes in energy bins from 3.3 to 21.6 MeV, 21.6 to 57.0 MeV, and above 57.0 MeV; and statistical errors associated with the fluxes.

********** MARINER 2 **********

Data set name - MULTI COORDINATE SYSTEM EPHEMERIS TAPE

NSSDC ID 62-041A-00D, MULTI COORD SYS EPHEM

Time period covered - 08/27/62 TO 01/04/63
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

Complete trajectory information was generated and supplied by JPL. The data are contained in two files on one 7-track magnetic tape in binary at 800-bpi. The 7094 system was used. File 1 has the trajectory information from the time of midcourse maneuver, September 5, 1962, to the approximate end of the spacecraft playback, January 4, 1963. The data are available from September 5, 1962, to December 14, 1962, with one ephemeris point given every 12 h and then at 1-h or 2-min (inner 4 h) intervals to December 16, 1962, and then at 12-h intervals to January 4, 1963. File 2 has the trajectory information at 1-min (for 20 min), 10-min (for next 2.3 h) and 1-h intervals from August 27, 1962, to August 29, 1962, and then in 3-h increments to September 5, 1962. The ephemeris information on the tape includes the following: (1) date, (2) time, (3) distance from earth to probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probecentered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16)Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) X,Y,Z components of spacecraft in the sun-earth line coordinate system (sun-centered system, X-axis is along the sun to earth vector, Z-axis is toward the ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) X, Y, Z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (X points to Vernal Equinox, Z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and X,Y,Z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth to probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the vector along the earth's spin axis and the earth to probe vector and the plane defined by the earth to probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun to probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane of date from the Vernal Equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, (29) and various clock angles and hinge and swivel angles which are described in the documentation. Some tracking station information is also included on the tape. These data include the data from data set 62-041A-08A.

MARINER 2, ANDERSON
COSMIC-RAY IONIZATION

Data set name - QUARTER DAY AND DAILY AVERAGED OMNIDIRECTIONAL FLUXES ON MICROFILM

NSSDC ID 62-041A-04A, QUARTER AND DAY AVG ION DATA LIST

Time period covered - 08/28/62 TO 12/30/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, which was supplied by the experimenter, consists of a computer listing on microfilm of 6-h and 24-h averaged omnidirectional fluxes from the ion chamber, stainless-steel-shielded GM tube, and beryllium-shielded GM tube in a time-ordered format. The stainless steel GM tube fluxes are separately calculated based on the 0.828-s accumulations and on the 9.6-s accumulations. This was also done for the beryllium-shielded GM tube fluxes. Hence, there are five fluxes calculated for a given 6-h time period -- four for the GM tubes and one for the ion chamber. The format also includes time and various statistical parameters. A detailed format description precedes the computer listing of these data.

MARINER 2, COLEMAN, JR.
FLUXGATE MAGNETOMETER

Data set name - MAGNETIC FIELD COMPONENTS ON TAPE

NSSDC ID 62-041A-03A, FIELD COMPONENTS ON MAG TAPE

Time period covered - 08/29/62 TO 11/15/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one 7-track, 556-bpi, binary tape, written on an IBM 7094, as submitted by the experimenter. The tape consists of 7709 physical records, each containing 21 logical records. There is one data point (logical record) on the tape for each 36.96 s. Each data point contains the time of the observation (day, h, min, and s), the heliocentric radius, solar colatitude, and solar longitude of the spacecraft, three orthogonal components in a quasi-solar equatorial coordinate system, plus the magnitude of the total field and an indication of whether an inflight calibration is occurring. The data are time ordered and cover approximately 70% of the period from August 29, 1962, to November 15, 1962.

Data set name - PLOTS OF MAGNETIC FIELD COMPONENTS ON MICROFILM

NSSDC ID 62-041A-03B, PLOTS OF FIELD COMPONENTS,2HR

Time period covered - 08/29/62 TO 10/31/62
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of two reels of 35-mm microfilm that were generated at NSSDC from hardcopy plots submitted by the experimenter. Each frame contains 2 h of data with data points presented every 36.96 s. The plots on each frame, from top to bottom, give approximate projections of the measured magnetic field on the solar equatorial plane and on a perpendicular plane containing the sun direction. A third graph gives the measured magnetic field magnitude and Mariner 2 plasma velocity data supplied by Dr. M. Neugebauer. These data, which are time ordered, cover approximately 70% of the period from August 29, 1962, to October 31, 1962.

MARINER 2, NEUGEBAUER
INFRARED RADIOMETER

Data set name - PUBLISHED INFRARED RADIATION TEMPERATURES

NSSDC ID 62-041A-02A, IR RADIATION TEMPERATURES

Time period covered - 12/14/62 TO 12/14/62
(As verified by NSSDC)

Quantity of data - 7 CARDS OF B/W MICROFICHE

These data consist of radiation temperatures of the 8.4- and 10.4-micron bands, which are available for three scans that were accomplished during planetary flyby on December 14, 1962. Each approximately meridianal scan consists of about five to eight frames, with the first scan crossing the dark side near

50 deg longitude, the second near the terminator, and the third in the sunlit side near 60 deg longitude. The accuracy of the temperatures obtained varies from 2 deg for source temperatures near 500 deg K to 10 deg for source temperatures near 200 deg K. The spatial resolution is 1/250 for the total planetary area. The data can be found in J. Geophys. Res., v. 68, pp. 6157-6169, 1963. A complete description of the instrumentation, operation, and calibration of the radiometer is also presented.

MARINER 2, NEUGEBAUER
SOLAR PLASMA ANALYZER

Data set name - REDUCED ELECTROMETER NUMBERS AND TIME DATA ON MAGNETIC TAPE

NSSDC ID 62-041A-06A, ELECTROMETER NUMBERS,-T, V,CALIB

Time period covered - 08/29/62 TO 12/30/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of electrometer output numbers (these are related to the measured current by a simple equation) and time for each energy-per-charge step. The data are contained on one 7-track, 800-bpi, binary magnetic tape in a 7094 DCS format. A FORTRAN IV program that reads and prints out the tape is available. The data set has a 90% coverage of the time period indicated.

Data set name - UNAVERAGED ANALYZED PLASMA PARAMETERS ON MAGNETIC TAPE

NSSDC ID 62-041A-06B, PLASMA PARAMETERS T,V,DEN

Time period covered - 08/29/62 TO 12/29/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These analyzed data consist of time, upper and lower limits of temperature, upper and lower limits of velocity, density of protons, ratio of alpha particle density to proton density, and a parameter that rates the validity of the model used in the analysis. The plasma parameters were derived by the experimenter from the reduced data on the basis of a convected isotropic Maxwell-Boltzmann velocity distribution. This assumption was applied to the proton portion of each spectrum and extended to the alpha particle portion by assuming either that proton and alpha particle temperatures or bulk speeds were equal. The data are on one 7-track, 556-bpi, binary magnetic tape. The 7094 system was used in preparing the tape. Data coverage over the time period indicated was 90%.

Data set name - ONE-HR AVERAGED PLASMA BULK VELOCITY DATA ON MAGNETIC TAPE

NSSDC ID 62-041A-06C, HOUR AVERAGES OF VELOCITY

Time period covered - 08/29/62 TO 12/30/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These analyzed data consist of 1-h averages of plasma bulk speed computed by the experimenter from unaveraged parameters (data set 62-041A-06B). Where upper and lower limits of the velocity were given, the upper limit was used in the calculation. The data are contained in one file on one 7-track, 556-bpi, BCD magnetic tape. Each physical record of 84 characters (a control word and an 80-character card image) contains the time, bulk speed, the number of values used to generate the average, and day of year. Data coverage is 90% over the time period indicated.

Data set name - THREE-HR AVERAGED PLASMA PARAMETER DATA

NSSDC ID 62-041A-06D, 3-HR AVG OF PLASMA PARAMETERS

Time period covered - 08/29/62 TO 12/29/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These analyzed data consist of 3-h averages of upper and lower limits of velocity, upper and lower limits of temperature, density, ratio of alpha particle density to proton density, and a high-energy tail parameter. Also included is the number of spectra used in computing each of the averages and time. These data were computed by the experimenter from unaveraged parameters. The data are contained on one file of a 7-track, 556-bpi, BCD magnetic tape with 84 characters (control word and 80 character card image) per physical record. There is a 90 % data coverage over the time period indicated. A microfilmed listing of this tape is also available (62-041A-06E).

Data set name - THREE-HOUR AVERAGES OF SOLAR WIND PLASMA PARAMETERS ON MICROFILM

NSSDC ID 62-041A-06E, 3HR AVGS OF PLASMA PARAM ON M/FLM

Time period covered - 08/29/62 TO 12/29/62
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are 16-mm microfilmed listings (about 10 feet of film) filmed at NSSDC of the 3-h averaged plasma parameters on magnetic tape (data set 62-041A-06D). Contained on the film are day number and time of day, solar wind speed, the number of spectra used to generate the average, the upper and lower limits of the temperature estimate, the density estimate, the ratio of alpha to proton density, and a parameter that describes the high-energy tail.

********** MARINER 4 **********

MARINER 4, ANDERSON
CELESTIAL MECHANICS

Data set name - TRAJECTORY PARAMETERS VS TIME ON TAPE

NSSDC ID 64-077A-09A, CELESTIAL MECHANICS,MAG TAPES

Time period covered - 11/28/64 TO 12/08/67
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of magnetic tapes of compressed, edited Mariner 4 tracking data recorded at 556 bpi, binary mode, on an IBM 7094 computer. One tape contains data from launch to December 5, 1964 (first midcourse maneuver). The data on the second tape cover the period from December 5, 1964, to December 8, 1967 (end of Mariner 4 mission). The information contained on the tape is range, range rate, elevation, azimuth, declination, hour angle, one-, two-, and three-way Doppler shift, time resolver, range units, and planetary range units. The sampling rate was once every 10 min except when the spacecraft was within 24 h of Mars, approaching and leaving. The sampling rate was once every minute under these conditions.

Data set name - CELESTIAL MECHANICS LISTING (2-WAY DOPPLER SHIFT VS. TIME) ON 16-MM MICROFILM

NSSDC ID 64-077A-09B, CELESTIAL MECHANICS LISTING

Time period covered - 12/05/64 TO 12/08/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is an experimenter-supplied listing of the two-way Doppler shift on 16-mm microfilm. Given on the listing are station number, time (UT), day, number, year, transmitter frequency, and Doppler shift, all ordered by station and then by chronology. Measurements are given in 10-min intervals, and the data presented are primarily scattered through the years 1965 and 1967.

MARINER 4, LEIGHTON
MARS TV CAMERA

Data set name - ENHANCED VERSIONS OF TELEVISION PICTURES

NSSDC ID 64-077A-01A, PHOTOS CALIBRATED + CORRECTED 4X5

Time period covered - 07/14/65 TO 07/14/65
(Date supplied by experimenter)

Quantity of data - 112 B/W NEGATIVE FRAMES

This data set contains several types of enhancements of the 21 pictures plus 21 lines of picture 22 returned by the television experiment. The photographs are on 4- by 5-in. negative film sheets. The following types of enhancements are available: type A -- Aeronautical Chart and Information Center (ACIC) air brush renditions (an interpretive rendition of what the surface of Mars may look like), type B -- a calibrated and

geometrically corrected version enhanced in contrast, type C -- the same as B, but also sharpened, type D -- a negative version of the calibrated, enhanced picture in the original picture format, type E -- a calibrated, contrast-enhanced version in the original picture format, type F -- same as E version, but also sharpened, type G -- "fluctuation plot" in which smooth areas are rendered as dark and locally rough areas are rendered as light. Calibration removes the sensor properties from the image, i.e., vidicon plate shading. Sharpening helps to delineate the crater edges. Variance plots are basically for photometry purposes. The pictures are numbered 1B, 1C, etc., denoting picture order number and enhancement type as designated above. Each of the first 16 pictures taken by the vidicon has been enhanced by the methods described. The ACIC airbrush renditions combine two overlapping pictures on one 4- by 5-in. film sheet. There are therefore eight of these numbered 1, 2A, 3, 4A, etc. Picture no. 1 was enhanced to discern haze. Since the picture element (pixel) range was small in pictures 17 to 22, the pixels have been linearly stretched to present some contrast in the image. The low contrast discernibility in the negatives, however, results in pictures of negligible value. In a separate enhancement of picture no. 1 (designated as 1H), pixels were stretched and lightened only in the haze portions in order to indicate contrast in this phenomenon. Reproductions and further discussion and interpretation of these television pictures are presented in Mariner Mars 1964 Project Report, Television Experiment, Part I, Investigators' Report, of JPL Technical Report 32-884, "Mariner IV Pictures of Mars," by Robert B. Leighton, et al., 1967.

Data set name - PICTURE ELEMENT MATRICES

NSSDC ID 64-077A-01B, PHOTOS OF MARS,JPL REPORT 32-884

Time period covered - 07/14/65 TO 07/14/65
(Date supplied by experimenter)

Quantity of data - 5 CARDS OF B/W MICROFICHE

This data set consists of microfiche pages of the Jet Propulsion Laboratory (JPL) Report, TR32-884, Part I. The report concerns the TV experiment and the resulting photography of Mars from Mariner 4, along with the investigators' reports. Reduced data are presented in numerical and pictorial form, and procedures for correcting the original digital data are described. Calibrated and contrast-enhanced pictures show much more detail than the uncorrected pictures: 300 distinct craters, and possibly 300 more which are less distinct, can be discerned in contrast to only 100 detected on the preliminary photos. Background information on the photos is given in appendices. Various renditions of 19 usable photographs are presented. These photos range from the Martian limb to the terminator. Of these photos, 16 have been calibrated, enhanced in contrast, sharpened in resolution, and geometrically corrected. These 16 photos are presented in the stated versions, plus an airbrush drawing as interpreted by Aeronautical Chart and Information Center (ACIC) personnel. Frames 17-22 are presented in one version only. Each picture appears in the following forms (a) the ACIC airbrush, (b) a calibrated and geometrically corrected version enhanced in contrast, (c) as (b) but sharpened, (d) a negative version of the calibrated, enhanced picture in the original format, (e) a calibrated, contrast-enhanced version of the original format, (f) as (e) but sharpened, and, (g) the pictures are presented in pairs, with a "fluctuation" plot in which smooth areas are rendered as dark and locally rough areas are rendered as light. The ACIC renditions incorporate two overlapping pictures of a pair in a single view, but the photographs are presented separately. Technical information is also provided and includes (1) filter used, (2) photo center location, (3) dimensions of the photo field in km, (4) local solar time and zenith angle, (5) brightness range and, (6) comments. Captions describe each version. This data set is found in TRF B-02970. Photo quality is very good and may be used in some scientific studies.

Data set name - TELEVISION PHOTOGRAPHS OF MARS ON MICROFILM

NSSDC ID 64-077A-01G, TELEVISION PICTURES ON MICROFILM

Time period covered - 07/14/65 TO 07/14/65
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of the complete photography of the Martian surface from the Mariner 4 mission received from JPL reproduced onto 35-mm microfilm. This data set may be used as a catalog for the Mariner 4 photography. Of the 22 raw frames obtained, only 12 contain usable data. These frames are of the original, raw, uncorrected photos only.

MARINER 4, SIMPSON
COSMIC-RAY TELESCOPE

Data set name - COSMIC-RAY TELESCORE RAW COUNT ACCUMULATIONS ON MAGNETIC TAPE

NSSDC ID 64-077A-04A, RAW COUNT RATE(CONTAIN OVRFLOW)

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the experimenter, consists of edited, uncorrected, real-time counting rate data in a time-ordered format. The data are on one 7-track BCD magnetic tape written at 800 bpi with 36 characters per logical record, 50 logical records per physical record, and one file per tape. Each logical record contains (1) time, (2) date, (3) satellite telemetry bit rate, (4) calibration information, and (5) accumulator outputs from several coincidence modes of the cosmic-ray telescope -- D1 not D2 (electrons >200 keV and protons and heavier nuclei 1.2 to 15 MeV/nucleon), D1D2 not D3 (protons and heavier nuclei 15 to 70 MeV/nucleon), and D1D2D3 (protons from 70 to 170 MeV and helium nuclei >70 MeV/nucleon). The data cover about 90% of the period when the spacecraft was active.

Data set name - COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID 64-077A-04B, PHA DATA(MEET JPL HI QUAL.LVL)

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the experimenter, consists of edited, real-time, pulse-height data in a time-ordered format. The data are on one 7-track BCD magnetic tape written at 800 bpi with 48 characters per logical record, 50 logical records per physical record, and one file per tape. Each logical record contains (1) time, (2) date, (3) satellite telemetry bit rate, (4) calibration information, and (5) pulse-height analysis information for detector element D1 of the cosmic-ray telescope. By noting whether the D3 element of the telescope was triggered at one of two discrimination levels, pulse-height analysis of protons and alpha particles separately from 15 to 70 MeV/nucleon, protons from 70 to 170 MeV, and alpha particles with energies e>70 MeV/nucleon was possible. The first coincidence event between D1 and D2 occurring between successive readouts was pulse height analyzed.

Data set name - ONE-HOUR AND 4-HR AVERAGE LOW-ENERGY COUNTING RATES ON MAGNETIC TAPE

NSSDC ID 64-077A-04C, D(1)RATE(1.4 HR.AVE)+DIS.SUM.

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the experimenter, consists of reduced 1-h and 4-h average D1 not D2 coincidence rates in a time-ordered format on one 7-track BCD magnetic tape written at 800 bpi. The tape format consists of 132-character physical records, where every fifth record corresponds to the 4-h average data. The 1-h average counting rate records contain the time (UT) of the beginning of the 1-h interval of accumulation, the date, the corrected counting rate average, and various data quality indicators. The 4-h records contain the corresponding information for the 4-h averages. The D1 not D2 cosmic-ray telescope coincidence corresponded to electrons with energies >200 keV and protons and heavier nuclei with energies 1.2 to 15 MeV/nucleon.

Data set name - FOUR-HR AND 24-HR AVERAGE COINCIDENCE COUNTING RATES ON MAGNETIC TAPE

NSSDC ID 64-077A-04D, D(1)D(2)RATE(4.24 HR.AVE)+D.S.

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the experimenter, consists of reduced 4-h and 24-h average D1D2D3 and D1D2 not D3 cosmic-ray telescope coincidence counting rates in a time-ordered format. The data are on one 7-track BCD magnetic tape written at 800 bpi. The data for each accumulation period (4 h or 24 h) are formatted in groups of seven successive physical records. All data for a given day of the mission are contained in as many groups of seven physical records as required for the 4-h averages and in one additional group of seven physical records for the 24-h accumulation and corrected counting rates. The 4-h averages were accumulated every 4 h starting at 0000 UT for

a given day and were compiled provided that at least one satellite telemetry frame (72 s long) of counting rate data existed in that time interval. Each group of seven physical records contains the day, time (UT of beginning of accumulation period), corrected accumulated counts and counting rates, and various data quality indicators. The D1D2 not D3 coincidence corresponds to protons and alpha particles from 15 to 70 MeV/nucleon, and the D1D2D3 coincidence corresponds to protons from 70 to 170 MeV and alpha particles of energies greater than 70 MeV/nucleon.

MARINER 4, SMITH
HELIUM MAGNETOMETER

Data set name - INTERPLANETARY MAGNETIC FIELD - 3 HOUR AVERAGES

NSSDC ID 64-077A-02A, INTRPLNTRY. MAG. FIELD-3 H AVGS.

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This analyzed data set consists of one 7-track, 556-bpi, BCD magnetic tape as supplied by the experimenter. It contains (1) 3-h averaged values of the spherical components of the vector magnetic field in an inertial heliocentric equatorial coordinate system, (2) the field magnitude, (3) the rms deviation of each of the averaged values, and (4) the number of data points used in the average. These data provide essentially complete coverage for heliocentric radial distances from 1 to 1.54 AU and for time periods which span 11 solar rotations.

Data set name - INTERPLANETARY MAGNETIC FIELD - 50.4 SECOND AVERAGES

NSSDC ID 64-077A-02B, INTRPLNTRY.MAG.FIELD-50.4 S AVGS.

Time period covered - 11/28/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set consists of three reels of IBM 7094, experimenter- generated, 556-bpi, binary, 7-track tape. The data consist of 50.4-s averages of the magnitude of the magnetic field and its three spherical components, in an inertial heliocentric equatorial coordinate system, expressed as functions of time. These tapes include all available data for the time period from November 28, 1964, to October 1, 1965. There are two significant data gaps, one from July 15 to August 3, and the other from August 31 to September 2. Each record contains 253 words (six bytes/word) and includes 21 data points.

Data set name - INTERPLANETARY MAGNETIC FIELD - 2.8 MINUTE AVERAGES

NSSDC ID 64-077A-02C, INTRPLNTRY.MAG.FIELD-2.8 MIN AVGS

Time period covered - 11/29/64 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This experimenter-generated microfilm contains Cartesian components of magnetic field and field magnitude plotted as a function of time. Averages of 2.8 min are plotted to a scale of 24 h per 35-mm frame. The data are presented in solar ecliptic coordinates. Time coverage is nearly continuous for the interval included.

Data set name - INTERPLANETARY MAGNETIC FIELD - 4.2 SECOND AVERAGES

NSSDC ID 64-077A-02D, INTRPLNTRY.MAG.FIELD-4.2 S AVGS.

Time period covered - 11/29/64 TO 01/03/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This experimenter-generated microfilm contains Cartesian components of magnetic field and field magnitude plotted as a function of time. Averages over 4.2 s are plotted to a scale of 1 h per 35-mm frame. The data are presented in solar ecliptic coordinates. Time coverage is nearly continuous for the interval included.

Data set name - INTERPLANETARY MAGNETIC FIELD - 16.8 SECOND AVERAGES

NSSDC ID 64-077A-02E, INTRPLNTRY.MAG.FIELD-16.8 S AVGS.

Time period covered - 01/03/65 TO 10/01/65
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This experimenter-generated microfilm contains Cartesian components of magnetic field and field magnitude plotted as a function of time. Averages of 16.8 s are plotted to a scale of 3 h per 35-mm frame. The data are presented in solar ecliptic coordinates. Time coverage is nearly continuous for the interval included.

********** MARINER 5 **********

MARINER 5, ANDERSON
CELESTIAL MECHANICS

Data set name - DOPPLER RADIO TRACKING DATA ON TAPE

NSSDC ID 67-060A-07A, CELESTIAL MECHANICS MAG,TAPES

Time period covered - 06/14/67 TO 11/20/67
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, provided by the experimenter, consists of 7-track, 556-bpi, binary magnetic tapes that were produced on an IBM 7094 computer system and used to record the Doppler radio tracking data from Mariner 5. One tape covers pre-midcourse data, and the second tape covers data from midcourse to the end of the mission. The information contained on these tapes includes range, range rate, elevation, azimuth, declination, right ascension, one-, two-, and three-way Doppler in cycles per second, time resolver, range units, and planetary range units. The frequency of the data points appearing on the tape varies from one point every 10 s to one point every 10 min.

MARINER 5, BRIDGE
INTERPLANETARY ION PLASMA PROBE FOR
E/Q OF 40 TO 9400 VOLTS

Data set name - HOURLY AVERAGED PROTON PLASMA PARAMETERS ON 16-MM MICROFILM

NSSDC ID 67-060A-03A, ONE HOUR AVG. PLASMA PARAM. -FILM

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data consist of one reel of 16-mm microfilm made by NSSDC from experimenter-generated computer listings of 1-h averaged interplanetary plasma parameters from Mariner 5. The printout contains the bulk velocity vector in both solar ecliptic and solar equatorial coordinates and corresponding standard deviations.

Data set name - HOURLY AVERAGED PROTON PLASMA PARAMETERS ON 7-TRACK BCD MAGNETIC TAPE

NSSDC ID 67-060A-03B, ONE HOUR AVG PLASMA PARAM.ON TAPE

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the experimenter, are on a single 7-track, 556-bpi, BCD magnetic tape with 402 characters per physical record. The tape contains one file, which includes the hourly averaged vector bulk proton velocity in solar ecliptic and solar equatorial coordinates, the number density, the most probable thermal speed, and the flux (bulk speed times number density) merged with the hourly vector magnetic field data from the triaxial low-field magnetometer experiment (67-060A-05B). The corresponding standard deviations are also included.

Data set name - LISTINGS OF COUNTS/FRAME-FINE TIME RESOLUTION ON MICROFILM

NSSDC ID 67-060A-03C, LISTINGS OF COUNTS/FRAME-FINE RES

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This microfilmed data set consists of tape printout tables of counts per frame in fine resolution of Faraday cup measurements. They were written on a FORTRAN IV CA BCD program which is given on the first four pages and which gives the parameters listed. Each set of frame counts and data array is given for the day of year, hour, minute and second of time, and frame count number. Sixteen columns of data are given.

Data set name - HIGH TIME RESOLUTION PLASMA PARAMETERS
MERGED WITH MAGNETIC FIELD VECTORS ON TAPE

NSSDC ID 67-060A-03D, PLASMA PARAM WITH B-FINE TIME TAP

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied data consist of fine time resolution plasma parameters and magnetic field written at 556 bpi on 7-track, binary magnetic tape on an IBM 360 computer. The blocks are fixed length with 10 logical records of 304 bytes per physical record. The data consist of time parameters (year, day, hour, minute, second), proton and alpha particle parameters, quality flags, magnetic field parameters, plasma flow velocities (km/s), flow angles, and position and aberration. The data from data sets -03D and -05E are merged on the same tape .

MARINER 5, ESHLEMAN
TWO-FREQUENCY BEACON RECEIVER

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON
CONTENT DATA ON PUNCHED CARDS

NSSDC ID 67-060A-02A, TOTAL ELECT CONTENT,HRLY VAL (CQ)

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of digitized hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one 556-bpi, 7-track, BCD magnetic tape generated at NSSDC from punched cards supplied by the experimenter. The tape also contains identical data for other time periods from Pioneers 6 (65-105A-04A), 7 (66-075A-04A), 8 (67-123A-03A), and 9 (68-100A-03A).

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON
CONTENT DATA ON MICROFILM

NSSDC ID 67-060A-02B, TOTAL ELECT CONTENT,HRLY (MO)

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of digitized and plotted hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on 35-mm microfilm generated at NSSDC from data supplied by the experimenter. This microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), and 9 (68-100A-03B), and solar wind electron-density plots from Pioneers 6 (65-104A-04E), 7 (66-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03D).

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON
DENSITY VS TIME NORMALIZED TO 1AU

NSSDC ID 67-060A-02C, CORRECTED ELECTRON DENSITY, TAPE

Time period covered - 09/01/67 TO 10/26/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of hourly values of normalized electron number density in the solar wind. To obtain these data, the ionospheric total content was removed from the observed total content values, and the total content path length was used to convert total content to density. The resulting values were then normalized to 1 AU assuming density to be proportional to the inverse square of the satellite-solar distance. Values resulting from interpolation are flagged. No interpolated values were recorded when data gaps exceeded 4 days. This data set is on one 800-bpi, 7-track, odd-parity, binary magnetic tape written on an IBM 7094 computer. Auxiliary data on the tape include UT and Carrington rotation number. Data are available for about 12 h per day when the spacecraft was in view from the Stanford transmitter. Identical data for other time periods from Pioneers 6 (65-105A-04D), 7 (66-075A-04D), 8 (67-123A-03C), and 9 (68-100A-03C) also appear on this tape.

MARINER 5, SMITH
TRIAXIAL LOW FIELD HELIUM MAGNETOMETER

Data set name - FINE-TIME SCALE MAGNETOMETER DATA ON
TAPE

NSSDC ID 67-060A-05A, TRIAX. MAGNETIC FIELD ON TAPE

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This experimenter-supplied data set on binary 556-bpi, 7-track IBM 7094 magnetic tape has a physical record size of 330 words, and a nominal logical record size of 652 words. Nominally there are 128 frames of data per logical record. Each frame contains five packed data words, corresponding to one time word and Cartesian components of three vector readings of the magnetic field. The time covered by each frame is 12.5 s for the high satellite bit rate and 50.4 s for the low rate. At the end of each logical record are contained ephemeris information and data required to generate the original telemetered data in spacecraft coordinates. These data are in the JPL version of spacecraft-centered solar ecliptic coordinates with the X-axis pointing radially away from the sun, the Y-axis pointing in the direction of planetary motion, and the Z-axis normal to the ecliptic (positive north). All available good quality data points, about 300,000 vector values, are contained on this tape.

Data set name - 1-, 3-, AND 24-HOUR AVERAGES OF
INTERPLANETARY MAGNETIC FIELD VECTORS

NSSDC ID 67-060A-05B, TRIAX HR. AVG. MAGNETIC FLD. TAPE

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This 9-track, 800-bpi, IBM 360, binary tape, supplied by the experimenter, contains averaged data from the JPL helium magnetometer experiment on Mariner 5. There are two logical records per 24 h of data. The first logical record spans 20 physical records of 257 words and one physical record of 173 words. This record contains time, ephemeris, 168.75-s, 22.5-min, 3-h, and 1-d averages of the magnetic field vector components in GSE coordinates, and the field magnitude, variance, and number of vector readings in each average. The second logical record spans 6 physical records of 255 words and one physical record of 227 words. It contains the cross variances for each of the above sets of averages. These data are merged with the bulk proton velocity data of data set 67-060A-03B.

Data set name - 1-DAY, 3-HR, AND 1-HR AVG PLOTS
OF TRIAXIAL MAGNETOMETER DATA ON MICROFILM

NSSDC ID 67-060A-05C, B-FIELD AVGS. 1 DAY, 3 HR, 1 HR

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of one reel of 35-mm experimenter-generated microfilm, as follows: (1) 1-h averages from June 14, 1967, to July 23, 1967, (2) 3-h averages from July 24, 1967, to November 21, 1967, and (3) 1-day averages

from June 14, 1967, to November 21, 1967. The magnetic field magnitude average and averages of the vector components in the JPL version of spacecraft-centered solar ecliptic coordinates are plotted. Data coverage is nearly complete.

Data set name - TRIAXIAL MAGNETIC FIELD MEASUREMENTS FOR THE MARINER ENCOUNTER WITH VENUS

NSSDC ID 67-060A-05D, TRIAX MAG. FLD. VENUS ENCOUNTER

Time period covered - 10/19/67 TO 10/19/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This tape generated from cards provided by the experimenter contains approximately 46.8-s averages of the magnetic field magnitude and vector components in spacecraft coordinates. Since Mariner 5 was three-axis stabilized, these components represent the field components along the spacecraft sun line, in the direction of motion about the sun, and normal to the ecliptic plane. Also contained on each card are the standard deviations for each of the averages. Data in this data set complement the data on magnetic tape (05A) and contain only the data relevant to the Venus planetary encounter.

Data set name - MAGNETIC FIELD VECTORS MERGED WITH HIGH TIME RESOLUTION PLASMA PARAMETERS ON TAPE

NSSDC ID 67-060A-05E, B WITH PLASMA PARAM-PLAS SCALE TP

Time period covered - 06/14/67 TO 11/21/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied data consist of fine time resolution plasma parameters and magnetic field data on 7-track binary written at 556 bpi on an IBM 360 computer. The blocks are fixed length with 10 logical records of 304 bytes per physical record. The data consist of time parameters (year, day, hour, minute, second), proton and alpha particle parameters, quality flags, magnetic field parameters, plasma flow velocities (km/s), flow angles, and position and aberration. The data on data sets -03D and -05E are merged on the same tape.

********** MARINER 6 **********

MARINER 6, ANDERSON
CELESTIAL MECHANICS

Data set name - CELESTIAL MECHANICS RANGE AND RANGE-RATE LISTING ON MAGNETIC TAPE

NSSDC ID 69-014A-05A, 2 WAY DOPPLER RADIO TRACKING,TAPE

Time period covered - 03/05/69 TO 09/02/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, obtained from the experimenter, is contained on 556-bpi, binary, 7-track magnetic tape generated on an IBM 7094 computer. Range and range-rate data are listed as a function of time. Also included are other useful parameters, such as the station used. The data, which are available in single precision or double precision form, cover the time period from midcourse maneuver through the 30th day after Mars encounter.

MARINER 6, BARTH
UV SPECTROMETER

Data set name - UPPER ATMOSPHERE FAR-UV, MIDDLE-UV, AND LYMAN-ALPHA SPECTRA

NSSDC ID 69-014A-04A, UPPER ATMOS. UV SPECTRA, MAG.TAPE

Time period covered - 07/31/69 TO 07/31/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, supplied by the experimenter, consists of two reformatted 7-track, 800-bpi, binary magnetic tapes with odd parity generated on a CDC 6400 computer. These tapes were derived from the original experimenter's data tape, which contained both the Mariner 6 and 7 ultraviolet spectrometer (UVS) data. The data set contains less than 30 min of UV data. File 1 contains unprocessed (as transmitted by the spacecraft) data between 1900 and 4000 A, while file 2 contains the same data calibrated in units of rayleighs/A. These spectra represent atmospheric emissions from the 90- to 240-km altitude region. The formats for the two files are identical. The first record of each file provides a six-word description of the file contents including information on whether the data are processed or unprocessed, whether the spectra are middle UV (1900 to 4000 A) or far UV (1100 to 1800 A), what units the data are in, and the record size. The subsequent records consist of a 10-word description of one spectrum (the spectral number, spacecraft ID, altitude at first wavelength, altitude at last wavelength, slit height, solar incident angle, solar emission angle, and phase angle) and the data from that spectrum. Each spectrum is presented as alternating words of wavelength and relative amplitude. These two files of data are unique in that no times of observation are given. The second tape contains one file of Lyman-alpha (1216 A) data derived from emissions observed near the planetary surface to 30,000-km altitude. The file consists of a series of three-word sequences that give (1) the integrated value of the Lyman-alpha signal in rayleighs, (2) the planetocentric distance of that signal in km, and (3) the actual time the signal was taken expressed in units of UT (in decimal form) times 10 to the 4. The quality of the data is excellent.

MARINER 6, KLIORE
S-BAND OCCULTATION

Data set name - S-BAND DOPPLER RESIDUALS/REFRACTIVITY DATA ON MAGNETIC TAPE

NSSDC ID 69-014A-06A, S-BAND OCCULTATION DATA, MAG TAPE

Time period covered - 07/00/69 TO 08/00/69
(Date supplied by experimenter)

Quantity of data - 2 REELS OF TAPE

This data set consists of Doppler residuals and refractivity data on 7-track, 800-bpi, Univac 1108, binary magnetic tapes. Data on both entrance and exit occultations from Mariner 6 (69-014A) and Mariner 7 (69-030A) are included. The data are reduced data supplied to NSSDC by the experimenter.

MARINER 6, LEIGHTON
MARS TV CAMERA

Data set name - RAW-ANALOG NEAR-ENCOUNTER PHOTOS

NSSDC ID 69-014A-01A, PHOTOS,RAW ANALOG NEAR ENCOUNTER

Time period covered - 07/31/69 TO 07/31/69
(Date supplied by experimenter)

Quantity of data - 25 B/W NEGATIVE FRAMES

This data set consists of 25 unenhanced photographs on 70-mm positive film. These are second-generation copies of the photographs taken by both the narrow-angle and the wide-angle cameras. Each photograph contains a limited view of the Martian surface.

Data set name - RAW-ANALOG FAR-ENCOUNTER PHOTOS

NSSDC ID 69-014A-01B, PHOTOS,RAW ANALOG FAR ENCOUNTER

Time period covered - 07/29/69 TO 07/30/69
(Date supplied by experimenter)

Quantity of data - 50 B/W NEGATIVE FRAMES

This data set consists of 50 unenhanced photographs taken by the narrow-angle camera. These are second generation copies on 70-mm positive film. The film was supplied by the experimenter team at JPL. Each photograph contains a limited view of the Martian surface.

Data set name - NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-014A-01C, PHOTOS, ENHANCED NEAR ENCOUNTER

Time period covered - 07/31/69 TO 07/31/69
(Date supplied by experimenter)

Quantity of data - 25 B/W NEGATIVE FRAMES

This data set is an enhanced version of the 25 near-encounter Mars photographs in the original computer

enhanced 70-mm negative version. In these photographs, which were produced for optimal presentation, the small-scale detail within each frame was emphasized, contrast was enhanced, system noises were suppressed, and geometric distortions were corrected by digital processing of the images on the spacecraft and on the ground during video reconstruction and rectification. Improvement of image resolution and sharpening of features was a result of high pass filtering. This processing of the television data achieves maximum quality image display for photo interpretation.

Data set name - FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY
OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-014A-01D, PHOTOS, ENHANCED FAR ENCOUNTER

Time period covered - 07/29/69 TO 07/30/69
(Date supplied by experimenter)

Quantity of data - 49 B/W NEGATIVE FRAMES

This data set is an enhanced version of 49 of the far-encounter Mars photographs in the original computer enhanced 70-mm negative version. In these photographs, which were produced for optimal presentation, small-scale detail within each frame was emphasized, contrast was enhanced, system noises were suppressed, and geometric distortions were corrected by digital processing of the images on the spacecraft and on the ground during video reconstruction and rectification. Improvement of image resolution and sharpening of features were a result of filtering. This processing of the television data achieves maximum quality image display for photo interpretation.

Data set name - NEAR-ENCOUNTER PHOTOMETRICALLY
DECALIBRATED PHOTOS

NSSDC ID 69-014A-01E, PHOTOMETRIC DECALIB NEAR ENCOUNTR

Time period covered - 07/31/69 TO 07/31/69
(Date supplied by experimenter)

Quantity of data - 50 B/W NEGATIVE FRAMES

This data set consists of two decalibrated versions of the 25 near-encounter photographs of Mars from the television investigation. These versions are on 70-mm negative film and were digitally processed to remove the effects of the TV system and to depict the actual scene luminance and large-scale albedo variations, not small-scale detail. The representation is rather flat in contrast for all the Martian terrain tonal characteristics. The spacecraft vidicons were calibrated to determine the relationship between the input luminance and the camera output signal as a function of position in each frame. Each picture element was then treated as a tiny photometer with unique transfer properties. The recorded output signal was converted to the actual scene luminance, and the result was stored in the corrected output image for these photometrically decalibrated photographs.

Data set name - FAR-ENCOUNTER PHOTOMETRICALLY
DECALIBRATED PHOTOS

NSSDC ID 69-014A-01F, PHOTOMETRIC DECALIB FAR ENCOUNTER

Time period covered - 07/29/69 TO 07/30/69
(Date supplied by experimenter)

Quantity of data - 98 B/W NEGATIVE FRAMES

This data set consists of two decalibrated versions of 49 of the far-encounter photographs of Mars from the television investigation. These versions are on 70-mm negative film and were digitally processed to remove the effects of the TV system and to depict the actual scene luminance and large-scale albedo variations, not small-scale detail. The representation is rather flat in contrast for all the Martian terrain tonal characteristics. The spacecraft vidicons were calibrated to determine the relationship between the input luminance and the camera output signal as a function of position in each frame. Each picture element was then treated as a tiny photometer with unique transfer properties. The recorded output signal was converted to the actual scene luminance, and the result was stored in the corrected output image for these photometrically decalibrated photographs.

Data set name - NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-014A-01G, MAX DISCRIM CONTRAST ENHANCED NE

Time period covered - 07/31/69 TO 07/31/69
(Date supplied by experimenter)

Quantity of data - 72 B/W NEGATIVE FRAMES

This data set consists of up to six alternative versions of 24 contrast-enhanced near-encounter photographs of Mars. (Frame 6N25 was not processed.) These versions were produced on 70-mm negative film by digitally processing the original raw analog data. The procedure divided the 256-level gray scale into three groups, the lower, middle, and upper data number ranges, and stretched one range. Each specialized version was produced from one of these gray-scale stretches. Video reconstruction and rectification processes, as in data sets -01C and -01D, were applied to obtain the final versions.

Data set name - FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY
ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-014A-01H, MAX DISCRIM CONTRAST ENHANCED FE

Time period covered - 07/29/69 TO 07/30/69
(Date supplied by experimenter)

Quantity of data - 195 B/W NEGATIVE FRAMES

This data set consists of up to six alternative versions of 49 contrast enhanced far-encounter photographs of Mars. These versions were produced on 70-mm negative film by digitally processing the original raw analog data. The procedure divided the 256-level gray scale into three groups (the dark, light, and polar cap data number ranges) and stretched one range. Each specialized version was produced from one of these gray-scale stretches. Video reconstruction and rectification processes, as in data sets -01C and -01D, were applied to obtain the final versions.

Data set name - NEAR-ENCOUNTER PHOTOGRAPHIC MOSAICS

NSSDC ID 69-014A-01I, PHOTOS, B/W MOSAICS NEG 4X5 NE

Time period covered - 07/31/69 TO 07/31/69
(Date supplied by experimenter)

Quantity of data - 2 B/W NEGATIVE FRAMES

This data set consists of two 4- by 5-in. mosaics assembled from the near-encounter photographs of Mariner 6. The first mosaic, assembled from frames 1 to 8, shows the Aurorae Sinus area. The second mosaic, assembled from frames 9 to 24, shows the Meridiani Sinus area. Collectively, these mosaics contain all the Mariner 6 near-encounter pictures except that taken right at the terminator.

Data set name - NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON
TAPE

NSSDC ID 69-014A-01J, NE ENHANCED TAPES

Time period covered - 07/31/69 TO 07/31/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set contains the complete set of Mariner 6 near-encounter enhanced photographs on two IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, the picture identification, and a history of the computer processing to which the picture has been subjected.

Data set name - NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS
ON TAPE

NSSDC ID 69-014A-01K, NE PHOTOMETRIC TAPES

Time period covered - 07/31/69 TO 07/31/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set contains the complete set of Mariner 6 near-encounter photometric photographs on two IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary

picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, picture identification, and a history of the computer processing to which the picture has been subjected. Documentation that describes the genesis and scaling of the numerical photometric data is available in hardcopy and is sent to requesters along with the tapes.

Data set name - FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON TAPE

NSSDC ID 69-014A-01L, FE PHOTOMETRIC TAPES

Time period covered - 07/29/69 TO 07/29/69
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set contains the complete set of Mariner 6 far-encounter photometric photographs on four IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, picture identification, and a history of the computer processing to which the picture has been subjected. Documentation that describes the genesis and scaling of the numerical photometric data is available in hardcopy and is sent to requesters along with the tapes.

MARINER 6, NEUGEBAUER
TWO-CHANNEL IR RADIOMETER MARS SURFACE TEMPERATURE

Data set name - REDUCED TWO-CHANNEL IR RADIOMETER DATA ON TAPE

NSSDC ID 69-014A-03A, 2 CHANNEL IR RADIOMETER DATA

Time period covered - 07/31/69 TO 07/31/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of reduced infrared radiometer data recorded on 800-bpi, 7-track, BCD magnetic tape. It contains, in tabular form, brightness temperatures (deg K) derived from the 8- to 12-micrometer and 18- to 25-micrometer radiometer channel outputs as a function of latitude, longitude, and spacecraft UT. The time span of the data is about 21 min, from 05 h 05 min 44 s to 05 h 26 min 57 s spacecraft UT on July 31, 1969. There are no temperatures deleted from the 8- to 12-micrometer channel, while only eight out of the possible 524 temperature readings are deleted from the 18- to 25-micrometer channel due to excessive response to off-axis radiation.

MARINER 6, PIMENTEL
IR SPECTROMETER

Data set name - IR SPECTROMETER DATA

NSSDC ID 69-014A-02A, IR SPECTROMETER DATA

Time period covered - 07/31/69 TO 07/31/69
(As verified by NSSDC)

Quantity of data - 6 CARDS OF B/W MICROFICHE

The IR spectral data from the Mariner 6 spectrometer experiment are contained on six 4-1/8- by 5-7/8-in. microfiche cards that were generated from the Jet Propulsion Laboratory's master data record tapes. The cards, which are attached to the University of California at Berkeley data format report, each show separate plots of the absorption intensity for channel 2 vs wavelength for 10-s intervals. Also included on the plots are the spectrum number, time of each spectrum, spacecraft number, and an indicator designating whether the spectra were high or low gain. The data cover the time period from 05 h 02 min 55 s to 05 h 32 min 10 s spacecraft UT on July 31, 1969. The quality of the data is good. A supplement to the data format report contains the spectrometer calibration data on four microfiche cards.

********** MARINER 7 **********

MARINER 7, ANDERSON
CELESTIAL MECHANICS

Data set name - CELESTIAL MECHANICS RANGE AND RANGE-RATE LISTING ON MAGNETIC TAPE

NSSDC ID 69-030A-05A, 2WAY DOPPLER RADIO TRKING ON TAPE

Time period covered - 04/12/69 TO 09/07/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, obtained from the experimenter, is contained on 556-bpi, binary, 7-track magnetic tape generated on an IBM 7094 computer. Range and range-rate data are listed as a function of time. Also included are other useful parameters, such as the station used. The data, which are available in single precision or double precision form, cover the time period from midcourse maneuver through the 30th day after Mars encounter.

MARINER 7, BARTH
UV SPECTROMETER

Data set name - UPPER ATMOSPHERE FAR-UV, MIDDLE-UV, AND LYMAN-ALPHA SPECTRA

NSSDC ID 69-030A-04A, UPPER ATMOS. UV SPECTRA, MAG.TAPE

Time period covered - 08/05/69 TO 08/05/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, supplied by the experimenter, consists of two reformatted 7-track, 800-bpi, binary (odd parity) magnetic tapes generated on a CDC 6400 computer. These tapes were derived from the experimenter's original data tape, which contained both the Mariner 6 and 7 ultraviolet spectrometer (UVS) data. The data set contains less than 30 min of UV spectra obtained by the Mariner 7 UV spectrometer investigation on August 5, 1969. The first tape contains four files of UV spectra. File 1 contains unprocessed data between 1900 and 4000 A. File 2 contains the same data as file 1 calibrated in rayleighs/A. File 3 contains unprocessed data between 1100 and 1800 A. File 4 contains the same data as file 3 calibrated in rayleighs/A. These spectra represent atmospheric emissions from the 90- to 240-km altitude region. The formats for the four files are identical. The first record of each file provides a six-word description of the file contents including information on whether the data are processed or unprocessed, whether the spectra are middle UV (1900 to 4000 A) or far UV (1100 to 1800 A), what units the data are in, and the record size. The subsequent records consist of a 10-word description of the spectrum (the spectral number, spacecraft ID, altitude at first wavelength, altitude at last wavelength, slit height, solar incident angle, solar emission angle, and phase angle) and the data from that spectrum. Each spectrum is presented as alternating words of wavelength and relative amplitude. These four files of data are unique in that no times of observation are given. The second tape in this data set contains one file of Lyman-alpha (1216 A) data derived from emissions observed near the planetary surface to 30,000 km altitude. The file consists of a series of three-word sequences that give (1) the integrated value of the Lyman-alpha signal in rayleighs; (2) the distance of that signal in km; and (3) the actual time the signal was taken expressed in units of UT (in decimal form) times 10 to the 4 power. The quality of the data is excellent.

MARINER 7, KLIORE
S-BAND OCCULTATION

Data set name - S-BAND DOPPLER RESIDUALS/REFRACTIVITY DATA ON MAGNETIC TAPE

NSSDC ID 69-030A-06A, S-BAND OCCULTATION DATA, MAG TAPE

Time period covered - 08/00/69 TO 08/00/69
(Date supplied by experimenter)

Quantity of data - 2 REELS OF TAPE

This data set consists of Doppler residuals and refractivity data on 7-track, 800-bpi, Univac 1108, binary magnetic tapes. Data on both entrance and exit occultations from Mariner 6 (69-014A) and Mariner 7 (69-030A) are included on the tapes. The data are reduced data supplied to NSSDC by the experimenter.

MARINER 7, LEIGHTON
MARS TV CAMERA

Data set name - RAW-ANALOG NEAR-ENCOUNTER PHOTOS

NSSDC ID 69-030A-01A, PHOTOS,RAW ANALOG NEAR ENCOUNTER

Time period covered - 08/05/69 TO 08/05/69
(Date supplied by experimenter)

Quantity of data - 33 B/W NEGATIVE FRAMES

This data set consists of 33 unenhanced photographs on 70-mm positive film. These are second-generation copies, of the photographs taken by both the narrow-angle and the wide-angle cameras. The film was supplied by the experimenter team at JPL. Each photograph contains a limited view of the Martian surface.

Data set name - RAW-ANALOG FAR-ENCOUNTER PHOTOS

NSSDC ID 69-030A-01B, PHOTOS,RAW ANALOG FAR ENCOUNTER

Time period covered - 08/02/69 TO 08/04/69
(Date supplied by experimenter)

Quantity of data - 93 B/W NEGATIVE FRAMES

This data set consists of 93 unenhanced photographs taken by the narrow-angle camera. The photos are second generation copies on 70-mm positive film. Each photograph contains a limited view of the Martian surface.

Data set name - NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-030A-01C, PHOTOS, ENHANCED NEAR ENCOUNTER

Time period covered - 08/05/69 TO 08/05/69
(Date supplied by experimenter)

Quantity of data - 32 B/W NEGATIVE FRAMES

This data set is an enhanced version of 32 of the near-encounter photographs of Mars returned by the television investigation. This version is the second-generation computer-enhanced 70-mm negative, produced for optimal presentation. Small-scale detail within each frame was emphasized, contrast was enhanced, system noises were suppressed, and geometric distortions were corrected by digital processing of the images on the spacecraft and on the ground during video reconstruction and rectification. Improvement of image resolution and sharpening of features was a result of high-pass filtering. This processing of the television data achieves maximum quality image display for photo interpretation.

Data set name - FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY OPTIMAL PRESENTATION PHOTOS

NSSDC ID 69-030A-01D, PHOTOS, ENHANCED FAR ENCOUNTER

Time period covered - 08/02/69 TO 08/04/69
(Date supplied by experimenter)

Quantity of data - 91 B/W NEGATIVE FRAMES

This data set is an enhanced version of 91 of the far-encounter photographs of Mars returned by the television investigation. This version is the second-generation computer-enhanced 70-mm negative, produced for optimal presentation. Small-scale detail within each frame was emphasized, contrast was enhanced, system noises were suppressed, and geometric distortions were corrected by digital processing of the images on the spacecraft and on the ground during video reconstruction and rectification. Improvement of image resolution and sharpening of features was a result of filtering. This processing of the television data achieves maximum quality image display for photo interpretation.

Data set name - NEAR-ENCOUNTER PHOTOMETRICALLY DECALIBRATED PHOTOS

NSSDC ID 69-030A-01E, PHOTOMETRIC DECALIB NEAR ENCOUNTR

Time period covered - 08/05/69 TO 08/05/69
(Date supplied by experimenter)

Quantity of data - 62 B/W NEGATIVE FRAMES

This data set consists of a decalibrated version of 31 of the near-encounter photographs of Mars from the television investigation. This version is on 70-mm negative film and was digitally processed to remove the effects of the TV system and to depict the actual scene luminance and large-scale albedo variations, not small-scale detail. This representation is rather flat in contrast for all the Martian terrain tonal characteristics. The spacecraft vidicons were calibrated to determine the relationship between the input luminance and the camera output signal as a function of position in each frame. Each picture element was then treated as a tiny photometer with unique transfer properties. The recorded output signal was converted to the actual scene luminance, and the result was stored in the corrected output image for these photometrically decalibrated photographs.

Data set name - FAR-ENCOUNTER PHOTOMETRICALLY DECALIBRATED PHOTOS

NSSDC ID 69-030A-01F, PHOTOMETRIC DECALIB FAR ENCOUNTER

Time period covered - 08/02/69 TO 08/04/69
(Date supplied by experimenter)

Quantity of data - 91 B/W NEGATIVE FRAMES

This data set consists of a decalibrated version of 91 far-encounter photographs of Mars from the television investigation. (Frames 7F34 and 7F68 are excluded due to insufficient photo data.) This version is on 70-mm negative film and was digitally processed to remove the effects of the TV system and to depict the actual scene luminance and large-scale albedo variations, not small-scale detail. This representation is rather flat in contrast for all the Martian terrain tonal characteristics. The spacecraft vidicons were calibrated to determine the relationship between the input luminance and the camera output signal as a function of position in each frame. Each picture element was then treated as a tiny photometer with unique transfer properties. The recorded output signal was converted to the actual scene luminance, and the result was stored in the corrected output image for these photometrically decalibrated photographs.

Data set name - NEAR-ENCOUNTER MAXIMUM DISCRIMINABILITY ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-030A-01G, MAX DIS CONTRAST ENHANCED NE

Time period covered - 08/05/69 TO 08/05/69
(Date supplied by experimenter)

Quantity of data - 93 B/W NEGATIVE FRAMES

This data set consists of up to six alternative versions of the 33 contrast enhanced near-encounter photographs of Mars. These versions were produced on 70-mm negative film by digitally processing the original raw analog data. The procedure divided the 256-level gray scale into three groups, the lower, middle, and upper data number ranges, and stretched one range. Each specialized version was produced from one of these gray-scale stretches. Video reconstruction and rectification processes, as in data sets -01C and -01D, were applied to obtain the final versions.

Data set name - FAR-ENCOUNTER MAXIMUM DISCRIMINABILITY ALTERNATIVE CONTRAST ENHANCED PHOTOS

NSSDC ID 69-030A-01H, MAX DIS CONTRAST ENHANCED FE

Time period covered - 08/02/69 TO 08/04/69
(Date supplied by experimenter)

Quantity of data - 379 B/W NEGATIVE FRAMES

This data set consists of up to six alternative versions of 91 contrast enhanced far-encounter photographs of Mars. (Frames 7F34 and 7F68 were not processed.) These versions were produced on 70-mm negative film by digitally processing the original raw analog data. The procedure divided the 256-level gray scale into three groups, the dark, light, and polar cap data number ranges, and stretched one range. Each specialized version was produced from one of these gray-scale stretches. Video reconstruction and rectification processes, as in data sets -01C and -01D, were applied to obtain the final versions.

Data set name - NEAR-ENCOUNTER PHOTOGRAPHIC MOSAICS

NSSDC ID 69-030A-01I, PHOTOS, B/W MOSAICS NEG 4X5 NE

Time period covered - 08/05/69 TO 08/05/69
(Date supplied by experimenter)

Quantity of data - 5 B/W NEGATIVE FRAMES

This data set consists of five mosaics assembled from the near-encounter photographs of Mariner 7. The first mosaic compromises frames 1 to 3 and shows the limb. The second mosaic includes frames 4 to 9 and shows the Meridiani Sinus area. The third mosaic, frames 11 to 19, shows the polar cap (photometric version), the fourth mosaic, frames 10 to 20, covers the polar cap (maximum discriminability version), and the last mosaic, frames 21 to 31, covers Noachis-Hellas. Collectively, these mosaics contain all the Mariner 7 near-encounter pictures except those taken right at the terminator.

Data set name - NEAR-ENCOUNTER ENHANCED PHOTOGRAPHS ON TAPE

NSSDC ID 69-030A-01J, NE ENHANCED TAPES

Time period covered - 08/05/69 TO 08/05/69
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set contains the complete set of Mariner 7 near-encounter enhanced photographs on three IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, picture identification, and a history of the computer processing to which the picture has been subjected.

Data set name - NEAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON TAPE

NSSDC ID 69-030A-01K, NE PHOTOMETRIC TAPES

Time period covered - 08/05/69 TO 08/05/69
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set contains the complete set of Mariner 7 near-encounter photometric photographs on three IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, picture identification, and a history of the computer processing to which the picture has been subjected. Documentation that describes the genesis and scaling of the numerical photometric data is available in hardcopy and is provided to requesters along with the tapes.

Data set name - FAR-ENCOUNTER PHOTOMETRIC PHOTOGRAPHS ON TAPE

NSSDC ID 69-030A-01L, FE PHOTOMETRIC TAPES

Time period covered - 08/02/69 TO 08/04/69
(As verified by NSSDC)

Quantity of data - 7 REELS OF TAPE

This data set contains the complete set of Mariner 7 far-encounter photometric photographs on seven IBM 360, 7-track, binary magnetic tapes, with odd parity at 800 bpi. Each file contains a single picture, and each record in a file corresponds to a line of TV pictures. A picture element is written in binary as an eight-bit byte. Preceding the binary picture data of each file are several label records written in EBCDIC. These records, which contain five 72-byte logical records each, provide information such as the number of lines and samples in the following file, picture identification, and a history of the computer processing to which the picture has been subjected. Documentation that describes the genesis and scaling of the numerical photometric data is available in hard-copy form and is provided to requesters along with the tapes.

Data set name - PRESS-RELEASE RECONSTRUCTED COLOR PHOTOS

NSSDC ID 69-030A-01M, PRESS RELEASE PHOTOGRAPHS 4X5

Time period covered - 08/02/69 TO 08/04/69
(Date supplied by experimenter)

Quantity of data - 1 COLOR POSITIVE FRAME

This data set consists of reconstructed color photography from three of the original Mariner 7 black and white frames taken through red, green, and blue filters. The originals also contained only 1/7 of the data, the rest being filled in by computer processing. The resulting photography shows more detail than can be seen from earth telescopic views. North polar and terminator haze and some craters can be distinguished on it. At present, NSSDC has only the press-release frame 71-HC-665.

MARINER 7, NEUGEBAUER
TWO-CHANNEL IR RADIOMETER MARS SURFACE TEMPERATURE

Data set name - REDUCED TWO-CHANNEL IR RADIOMETER DATA ON TAPE

NSSDC ID 69-030A-03A, 2 CHANNEL IR RADIOMETER DATA

Time period covered - 08/05/69 TO 08/05/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of reduced infrared radiometer data recorded on 800-bpi, 7-track, BCD magnetic tape. It contains, in tabular form, brightness temperatures (deg K) derived from the 8- to 12-micrometer and 18- to 25-micrometer radiometer channel outputs as a function of latitude, longitude, and spacecraft UT. The time span of the data is about 26 min, from 04 h 42 min 05 s to 05 h 08 min 28 s spacecraft UT on August 5, 1969. There are 109 temperature readings deleted from a possible 520 from the 8- to 12-micrometer channel, while only 40 out of 520 temperatures are deleted from the 18- to 25-micrometer channel due to excessive response to off-axis radiation.

MARINER 7, PIMENTEL
IR SPECTROMETER

Data set name - IR SPECTROMETER DATA ON MICROFICHE

NSSDC ID 69-030A-02A, IR SPECTROMETER DATA

Time period covered - 08/05/69 TO 08/05/69
(As verified by NSSDC)

Quantity of data - 14 CARDS OF B/W MICROFICHE

The IR spectral data from the Mariner 7 spectrometer experiment are on 4-1/8- by 5-7/8-in. microfiche cards generated from the Jet Propulsion Laboratory's master data record tapes. The cards, which are attached to the University of California at Berkeley data format report, each show separate plots of the absorption intensity for channels 1 and 2 vs wavelength for 10-s intervals. Also included on the plots are the spectrum number, time of each spectrum, spacecraft number, and an indicator designating whether the spectra were high or low gain. The data cover the time period from 04 h 39 min 49 s to 05 h 13 min 23 s spacecraft UT on August 5, 1969, and are of good quality. A supplement to the data format report contains the spectrometer calibration data on four microfiche cards.

********** MARINER 9 **********

Data set name - PRELIMINARY TRAJECTORY CHART

NSSDC ID 71-051A-00D, PRELIMINARY TRAJ. CHART

Time period covered - 05/30/71 TO 11/30/73
(As verified by NSSDC)

Quantity of data - 1 PAGE OF UNBOUND HARDCOPY

This data set consists of two sets of charts of preliminary trajectories provided by JPL. One set of charts is for the spacecraft Pioneer E (69-075X launched August 27, 1969, but failed to attain orbit), Pioneer F (Pioneer 10, 72-012A), and Pioneer G (Pioneer 11, 73-019A). This set can be used to determine the position of the spacecraft with respect to the earth-sun line at various times into the missions. A user can also determine the estimated telemetry bit rate that was used as a function of position of the spacecraft with respect to the sun, and as a function of the various communication antennas

available to receive the data. The reverse side of the chart contains similar information for Mariner 71 (Mariner 9, 71-051A), Mariner J (Mariner 10, 73-085A), Helios-A (74-097A), and Pioneer 9 (68-100A) superimposed on the Pioneer E, F, and G trajectories. The second set of charts is similar to the first but contains Mariner 9, Pioneer 10, Pioneer G, Mariner J, and Helios A on one side, and Pioneer 10 and Pioneer G on the other side. Both sets of charts can be used to determine the direct line-of-sight viewing period.

Data set name - ORBITAL DATA FOR THE COMPLETE MISSION OF MARINER 9 ON MAGNETIC TAPE

NSSDC ID 71-051A-00E, MARINER 9 ORBIT DATA TAPES

Time period covered - 05/30/71 TO 10/25/72
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

This data set contains Mariner 9 orbit data tapes originated on a UNIVAC 1108 using Fortran V unformatted write statements. The tapes were written in binary at 800 bpi in seven tracks with odd parity. Each tape contains one file. Each tape is a series of records which has been divided into groups, describing the tape itself or containing actual spacecraft data. The tapes begin with a file identification group, followed by a user label group, an orbit data summary group, an identifier group, an orbit data group (which contains the actual spacecraft orbit data), a control statement group, and finally, a file close group (which ends with a physical end-of-file mark on tape). All records are written in logical records of 28-word size with one exception, the orbit data logical records (part of the orbit data group) that are blocked into 252-word records. Some of the tapes do not end exactly as the format description indicates, i.e., with a file close group.

MARINER 9, EARTH
ULTRAVIOLET SPECTROMETER (UVS)

Data set name - PUBLISHED DATA ON MARS' LOWER ATMOSPHERE ON MICROFICHE

NSSDC ID 71-051A-02A, LOWER ATMOSPHERE DATA ON FICHE

Time period covered - 11/27/71 TO 01/21/72
(As verified by NSSDC)

Quantity of data - 7 CARDS OF B/W MICROFICHE

This data set consists of three published reports supplied by the experimenter -- "Mariner 9 Mars Orbiter Ultraviolet Spectrometer (UVS) Experiment Data Report 2, December 22, 1971", "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 4, February 2, 1972", and "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 12, March 22, 1972." These reports were published in hardcopy by the Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, Colorado. Report 2 covers November 27 to December 15, 1971, which coincides with the planetwide dust storm conditions in the lower atmosphere. It presents the UVS data and several appropriate observational parameters grouped according to orbital pass and plotted as a function of time. The first figure of each group shows the path of observation on a 1 to 50,000,000-scale Mercator projection. The subsequent figures of each group come in pairs and include (1) a figure showing the cosine of the illumination angle, the cosine of the instrument viewing angle, and the scattering angle, (2) the UV data showing the reflectance of the 3050-A band, the blue color reflectance ratio (2580 A/3050 A), and the red color reflectance ratio (3380 A/3050 A). Usually there will be two sets of figures for the morning mapping sequence and one for the afternoon sequence. Report 4 covers December 16, 1971, to January 1, 1972. This was a period when the lower atmosphere of Mars began to clear. As in Report 2, the data have been grouped according to orbital pass and plotted as a function of time, with the first figure in each group being the Mercator chart showing the general latitude and longitude regions covered during the pass. However, following this figure the data arrangement is somewhat different. All the 3050-A and 2630-A data obtained on that pass are plotted in time sequence. Each section of data is subdivided into two parts and arranged on opposite pages covering the same time interval. Four curves based on the viewing and illumination geometries have been included to facilitate an understanding of the geometry of the measurements -- (1) the scattering angle is plotted along with the 2630-A to 3050-A reflectance ratio and (2) the cosines of the solar incidence and viewing emission angles and a representative photometric function are plotted along with the 3050-A reflectance. Report 12 covers January 3 to January 21, 1972. As before, the data are presented in orbital sequence, and the coverage is indicated on the Mercator projection. Also indicated on this map is the scattering angle for each of three time intervals of observation. The second figure shows the 3050-A reflectance and the red color ratio plotted as a function of time.

Data set name - PUBLISHED DATA ON MARS' UPPER ATMOSPHERE AIRGLOW ON MICROFICHE

NSSDC ID 71-051A-02B, UPPER ATMOSPHERE-AIRGLOW, FICHE

Time period covered - 11/14/71 TO 02/08/72
(As verified by NSSDC)

Quantity of data - 8 CARDS OF B/W MICROFICHE

This data set consists of six published reports supplied by the experimenter - "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 1, December 8, 1971", "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 3, December 15, 1971", "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 5, December 29, 1971", "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 7, January 5, 1972", "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 9, January 26, 1972", and "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 11, February 16, 1972." These reports were published in hardcopy by the Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, Colorado. Report 1 provides Mars upper atmosphere airglow data that were obtained on November 14, 1971, during the first orbit in which high data rate communication was possible with Mariner 9 following orbit insertion. The report also includes data obtained during a systematic upper atmosphere study from November 27 to December 3, 1971. The airglow emissions are grouped as - (1) the CO fourth positive bands and the CI 1561- and 1657-A lines in the 1418- to 1758-A spectral region, (2) the CO Cameron bands in the 1910 to 2458 A spectral region, (3) the OI 1304-A line, and (4) the HI 1216-A lines. The data are presented in successive groups of eight figures containing the log emission rate vs altitude for each of the above four spectral ranges for the eight orbits reported. The orbital pass number is indicated on each figure. A table is also included giving the orbital parameters associated with each bright limb crossing. Report 3 covers the period November 20 through December 13, 1971; Report 5 covers the period December 15 to December 21, 1971; Report 7 covers the period December 23, 1971, to January 2, 1972; Report 9 covers the period January 3 to January 21, 1972; and Report 11 covers the period January 23 to February 8, 1972. All these reports present the same data in the same format with one exception. An anomaly appeared in the long wavelength channel on orbit 114 and affected the acquisition of airglow data in that region. Consequently, no data for the CO Cameron bands are presented after this date. The other data, however, are unaffected.

Data set name - PUBLISHED DATA ON 1216- AND 1304-A LIMB AND DISC AREAS OF MARS ON MICROFICHE

NSSDC ID 71-051A-02C, 1216, 1304 A LIMB/DISC DATA,FICHE

Time period covered - 11/12/71 TO 12/06/71
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of two published reports supplied by the experimenter - "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 8, March 8, 1972", and "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 10, March 15, 1972." These reports were published in hardcopy by the Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, Colorado. Report 8 provides OI 1304-A data from both the bright limb and disc of Mars. The 1304-A data have been previously reported in Data Reports 1 and 3 (71-051A-02B). Presented in Report 8 are data for November 12, 1971, and for November 27 to December 4 and 6, 1971. Each pass shown represents approximately 30 min of viewing time as the FOV crossed the bright limb, moved onto the disc, and continued past the evening terminator. The data are divided into two parts - preorbital and orbital. Figures 1 and 2 deal with the preorbital data. Figure 1 shows first-order spectrum between 1270 and 1370 A obtained by averaging 511 successive spectra of the disc of Mars viewed from approximately 300,000 km. The relative intensity of OI 1304 and OI 1356 are depicted on an intensity vs wavelength plot with a disc in the upper right hand corner showing the illumination of the disc and the FOV. Figure 2 shows theoretical intensity contours of these features for the same viewing conditions. Figures 3 to 11 deal with the orbital data. Each figure is composed of two parts. The upper half shows the orbital parameters (cosine of angle at intersection point between look direction and local zenith, cosine of solar zenith angle, and scattering angle) needed to specify the line of sight and solar zenith angle along that line. The lower half of each figure shows the 1304-A intensity, a theoretical 1304-A intensity, and the CO (a-x) intensity on a relative scale. Also indicated is the approximate time the FOV moved from the limb onto the disc. Report 10 provides HI 1216-A Lyman-alpha data from both the bright limb and disc of Mars. The data format is identical to that of Report 8, except that there are no preorbital data, theoretical 1216-A intensity, and CO (a-x) plots included. This report covers the same period as Report 8.

Data set name - STELLAR UV SPECTRA DATA ON MICROFICHE

NSSDC ID 71-051A-02D, STELLAR DATA ON MICROFICHE

Time period covered - 11/14/71 TO 01/16/72
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of one published report, in hardcopy form, provided by the experimenter - "Mariner 9 Mars Orbiter Ultraviolet Spectrometer Experiment Data Report 6, January 19, 1972." The report covers the period November 14, 1971, to January 16, 1972. The data consist of stellar spectra observed by the UV spectrometer ranging in spectral type from O7 to A2. The data are presented in plots of instrumental response in data numbers vs wavelength in angstroms for both the 1400 to 3400 A and 1100 to 2000 A channels of the instrument. The sky background Lyman-alpha emission has not been removed from these plots. The data for each of the plots have been multiplied by an arbitrary constant to make the peak intensity fall between 200 and 250 data numbers. Noise pulses were suppressed by ignoring signals greater than a fixed level and the spectra have been smoothed with a running three-point average. Headings for the plots give the star name, orbit number, and scaling factor. The quality of the 1400 to 3400 A channel data is not as high as that of the 100 to 2000 A channel because of a higher noise level and a smaller field of view, which reduced the effective observing time for the star. Stellar measurements were by Mariner 9 when the planet could not be viewed, i.e., a 20-min period after earth occultation and a period of an hour or two at apoapsis between the end of tape recorder playback and the time Mars sets at Goldstone. The region of the sky that was observable with the instrument was limited by spacecraft design to the area north of the ecliptic between 96 deg and 165 deg from the sun. Each orbit generated about one million stellar data points. Good data were obtained for 29 stars. These stars are listed in a table presented in the report along with the spectral type, the visual magnitude, the blue to visual intensity magnitude ratio, the UV to blue intensity magnitude ratio, the number of scans summed, indications if any 1400 to 3400 A channel plots were obtained, and the pass number. Also included were (1) a table giving the strongest UV lines in the Mariner 9 stellar data, (2) a picture giving the sequence of spacecraft events for a typical zenith (Goldstone) pass, (3) a celestial map showing the area of the sky that could be observed with the instrument on November 15, 1971, and (4) a plot showing the average signal in the 100 to 1200 A channel during orbit 72.

Data set name - AN ATLAS OF MARS: LOCAL TOPOGRAPHY

NSSDC ID 71-051A-02E, LOCAL TOPOGRAPHY-ATLAS

Time period covered - 01/22/72 TO 02/26/72
(As verified by NSSDC)

Quantity of data - 13 CARDS OF B/W MICROFICHE

This atlas, microfiched from hardcopy provided by the experimenter, presents altitude profile information for the surface of Mars, derived from the ultraviolet spectrometer (UVS) data. During close approaches to the planet, the bore-sighted UVS and television cameras made observations simultaneously. From these data, altitude profile information was matched with the observed surface features. Pairs of TV pictures are shown in the lower portion of each page. The UVS track is shown as the heavy dark line across the center of the photographs. The upper portion of each page contains the altitude profile for the track shown. The right hand legend gives the revolution number, the spacecraft code data acquisition signal time (DAS-time from launch), the latitude and longitude of the center of the left-hand TV picture. Within a sequence of photographs taken on an orbital pass the TV pictures appear twice, first following and then leading photos of a pair, for ease of interpretation of the data. The true surface distance can be found by expanding the distance axis by the scale factor given in the accompanying table. Distances found this way are accurate for the center to center distance of the picture pair. The accompanying documentation identifies periods of dust storms which contaminate the data, and detail the formula used to construct the profile.

Data set name - PRESSURE-ALTITUDE MEASUREMENTS ON MARS

NSSDC ID 71-051A-02F, PRESSURE ALTITUDE MEASUREMENTS

Time period covered - 01/23/72 TO 03/01/72
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set microfiched by NSSDC from a reprint of an article "Mariner 9 Ultraviolet Spectrometer Experiment: Pressure-Altitude Measurements on Mars" by C.W. Hord et al, which was published in Icarus, 21, 292-302 (1974). UVS measurements of the reflectance at 3050 A are modeled to give pressure-altitudes for Mars assuming a quiescent atmosphere. The overall scaling factor is found by intercomparison with Mariner 9 occultation pressures. Data appear in both table and contour plot forms.

MARINER 9, HANEL
INFRARED INTERFEROMETER SPECTROMETER
(IRIS)

Data set name - INFRARED INTERFEROMETER SPECTROMETER DATA TAPES

NSSDC ID 71-051A-03A, MARINER 9 IR INTER. SPECT. (IRIS)

Time period covered - 11/14/71 TO 10/16/72
(As verified by NSSDC)

Quantity of data - 5 REELS OF TAPE

This data set consists of 1600-bpi binary data tapes, produced on an IBM 360. The tapes are 9 track. Each contains one file of data. The records have a physical record size of 6408 bytes and a logical record size of 6404 bytes. Each tape contains the following seven types of records - (1) tape summary, (2) cold reference calibration, (3) warm reference calibration, (4) average normalized responsivity, (5) noise equivalent radiance, (6) average instrument temperature, and (7) calibrated Martian spectra. Approximately 21,000 calibrated spectra are included in this data set. For a more complete description of this data set, including calibration procedures, see Hanel, "Mariner 9 Infrared Interferometer Spectrometer (IRIS) Reduced Data Records Documentation", October 1973, GSFC X-622-73-305.

MARINER 9, KLIORE
S-BAND OCCULTATION

Data set name - REDUCED AND ANALYZED MARTIAN OCCULTATION DATA (TABLES AND PLOTS) ON MICROFILM

NSSDC ID 71-051A-04A, OCCULTATION DATA,PLOT+TABLES,FILM

Time period covered - 11/14/71 TO 10/26/72
(As verified by NSSDC)

Quantity of data - 11 REELS OF MICROFILM

This data set contains both reduced and analyzed data on 16-mm microfilm. The reduced data are tables and plots of observed frequency and residuals (both raw and smoothed) versus time. The analyzed data include tables and plots of derived electron density, plasma scale height, plasma temperature, mass density, number density, temperature lapse rate, pressure scale height, pressure, and temperature versus radius from the center of mass of the planet Mars. Most of these items are also listed and plotted versus altitude from the surface. The spacecraft orbit number, day of year, and start-stop times are also given for each occultation. Geodetic coordinates (latitude, longitude, surface radius, parameters referenced to a reference ellipsoid) are also given for each occultation. Data are included from the standard mission (orbits 0 to 79), the first extended mission (orbits 352 to 450), and the second extended mission (orbits 638 to 696).

MARINER 9, MASURSKY
TELEVISION PHOTOGRAPHY

Data set name - MTVS RAW PHOTOS ON B/W POSITIVE 70-MM FILM

NSSDC ID 71-051A-04A, PHOTOS, MTVS RAW

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 8461 B/W POSITIVES

This data set which consists of 70-mm B/W film, is one of three versions reproduced from the digitized images transmitted from cameras on Mariner 9. These photographs, reproduced by the MTVS laboratory have had no enhancement, stretching, or filtering, and hence are raw data. The other two versions appear next to the raw version, followed by a data block containing the following information: mission designation, playback number, orbit (often not given), set (often not given), time from periapsis, slant range, viewing angle, phase angle, lighting angle, latitude and longitude of corners and center of frame, picture number, camera, filter, exposure time, DAS number, rate, pn errors, pixel spikes, frame number, stretch control, translation, and picture version. Below the picture are two graph charts, one showing data output and the other showing film output.

Data set name - MTVS ALBEDO PHOTOS ON B/W POSITIVE 70-MM FILM

NSSDC ID 71-051A-04B, PHOTOS,MTVS ALBEDO

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 8461 B/W POSITIVES

This data set is the albedo version of data set -01A. In these frames, the original data have been computer-enhanced (shading corrected) and stretched to bring out the range of brightness of details that are contained in the originals. This version may be used for more magnified data on range of albedos or the light reflectance range of the Martian surface. The accompanying data block contains the following information: mission designation, playback number, orbit (often not given), set (often not given), time from periapsis, slant range, viewing angle, phase angle, lighting angle, latitude and longitude of corners and center of photo, picture number, camera filter, exposure time, DAS number, rate, pn errors, pixel spikes, frame number, stretch control, translation, and picture version. Below the picture are two graphs, one showing the data output and the other showing film output. The quality is generally good after the first 40 revolutions. In the first few weeks of photography, a planet-wide dust storm obscured nearly all surface detail. After the dust settled, excellent detail was recorded.

Data set name - MTVS MAXIMUM DISCRIMINATION PHOTOS ON B/W POSITIVE 70-MM FILM

NSSDC ID 71-051A-04C, PHOTOS,MTVS MAX DISCRIMINATION

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 8461 B/W POSITIVES

This data set is the enhanced version of data set -01A and is the third version of the original data as processed by the MTVS laboratory. This version contains the photos that resulted after the digital data had been passed through a filtering process that gives maximum discrimination of details but in which the albedo is not as apparent as in the albedo version. Each frame is accompanied by a data block that gives the following information: mission designation, playback number, orbit (often not given), set (often not given), time from periapsis, slant range, viewing angle, phase angle, lighting angle, latitude and longitude of corners and center of photo, picture number, camera filter, exposure time, DAS number, rate, pn errors, pixel spikes, frame number, stretch control, translation, and picture version. Below the picture are two graphs, one showing data output and the other showing film output. The quality is generally good after about revolution 40. Before that time the camera was operating during a planet-wide dust storm which obscured nearly all detail. After about the first 3 weeks of the mission, the dust settled and excellent detail was recorded.

Data set name - IPL ALBEDO PHOTOS ON BLACK/WHITE POSITIVE 70-MM FILM

NSSDC ID 71-051A-04D, IPL ORTHOGRAPHIC CONTRAST ENHANCE

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 8410 B/W POSITIVES

These photographs are albedo versions of the original 70-mm frames processed by the IPL laboratory. The albedo versions have been enhanced by stretching out albedos for contrast, thus encompassing the entire brightness range of the exposed regions. A data block included on the frame gives the following data: mission designation, date, time, DAS number, picture number, exposure time (ms), filter used, altitude of spacecraft, view zenith angle, longitude and latitude of center of photo, approximate horizontal distance (width) on surface, vertical distance (height) on surface, solar zenith angle, frame corner coordinates, correction for residual image, conversion factor for luminosity (to fL), and stretch factor. This version has had first-order correction for error and orthographic correction. The quality of the frames is generally good. Very little detail is found on the frames taken early in the mission (November-December 1971) owing to the planet-wide dust storm in progress at that time.

Data set name - IPL MAXIMUM DISCRIMINATION PHOTOS ON BLACK/WHITE POSITIVE 70-MM FILM

NSSDC ID 71-051A-04E, IPL ORTHOGRPHIC MAX DISCRIM.

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 8410 B/W POSITIVES

These photos are enhanced versions of the original 70-mm frames processed by the IPL laboratory. In this version the original has been filtered to produce maximum discrimination for surface detail and has had some first-order error correction and orthographic correction. Included on each frame is a data block containing the following information: mission designation, date, time, DAS no., picture, exposure time (in ms), filter used, altitude of spacecraft, view zenith angle, longitude and latitude of photo center, approximate horizontal distance covered on the Martian surface in the frame (width), vertical distance on surface covered by the frame (height), solar zenith angle, corner coordinates of the frame, correction for residual image, conversion factor for luminosity (to fL), and stretch factor. The quality is generally good. Very little detail is seen on those frames taken early in the mission (November-December 1971) owing to the planet-wide dust storm in progress at that time.

Data set name - MTVS PHOTOGRAPHS, WITH SUPPORT DATA, ON MICROFICHE

NSSDC ID 71-051A-04F, MTVS PHOTOS W/SUP DATA, ON MFICHE

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 759 CARDS OF B/W MICROFICHE

This data set consists of 4- x 6- in. B/W microfiche containing all versions of the Mariner 9 TV imagery reproduced by the MTVS laboratory. The versions are (1) raw, (2) albedo, (3) maximum discrimination (horizontally filtered) and, in some cases, (4) maximum discrimination vertically filtered. These versions appear side by side, followed by the data block with the data common to all versions. Up to 60 frames appear on each card. Up to four successive cards constitute the imagery from one orbit. The last card contains additional support data. The cards are ordered by roll and file numbers and are also DAS sequential. The DAS number is the common datum to all versions of the same picture. Each card is headed by the identification of the mission photo laboratory and roll number. The last card for each orbit contains updating of some of the parameters contained in the data blocks that contain predicted values that may be in error. These microfiche constitute the NSSDC catalog of Mariner 9 MTVS photography. Included are 15 cards containing the additional and complete supporting data for each of the frames of the photography.

Data set name - PANORAMIC MOSAIC PHOTOGRAPHS ON 4- BY 5-IN. B/W FILM SHEETS

NSSDC ID 71-051A-04G, BLACK & WHITE PANORAMIC MOSAICS

Time period covered - 11/14/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 96 B/W NEGATIVE FRAMES

This data set consists of 4- x 5- in. negatives filmed from JPL-prepared mosaic boards containing the Mariner 9 3 camera (narrow-angle, high-resolution) photography in which frames in a given quadrangle of the Martian surface are shown together. Frames of adjacent areas are arranged together, producing a kind of mosaic. The last four digits of the DAS time are given beside each frame, the JPL-assigned board number at the lower right corner, and the camera and type of processing (shading corrected [SC] or maximum discrimination, either vertically [VAGC] or horizontally [HAGC] in the upper right corner. The revolution number and full DAS time are given in each row. The quality is excellent, and these photos can be used for some scientific purposes, but their main purpose is for use as a catalog. An index, together with reduced-size copy of each of the mosaics, is available in microfilm (see 71-051A-04N).

Data set name - TELEVISION PHOTOGRAPHY SUPPORTING DATA ON 16-MM MICROFILM

NSSDC ID 71-051A-04H, SEDR SUPPORT DATA 16-MM M/FILM

Time period covered - 11/14/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm containing the supporting data for the complete 70-mm photography of the Mariner 9 mission. Explanatory tables and diagrams are at the beginning of the roll and pertain to the following supporting data: revolution number, DAS time, camera, shutter time in UT, day of year, filter and exposure time, local time from time of

periapsis, distance from spacecraft to center of planet (RMAG), true anomaly of the spacecraft (SC/TA), sun's latitude and longitude, spacecraft's latitudes and longitudes, principal point's latitude and longitude (Q lat and Q long), picture height and width, north direction on the planetary surface measured in the image plane and pixel size, and sun angle (which is the sun's direction on the planet measured in the image plane). These support data are early data that contain some errors. The SEDR support data (data set 71-051A-04K) on magnetic tape contain the final best data.

Data set name - TELEVISION PHOTOGRAPHY INDEX DATA ON 16-MM MICROFILM

NSSDC ID 71-051A-04I, TELEVISION INDICES 16-MM M/FILM

Time period covered - 11/14/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of the complete indexes of MTVS and IPL versions of the Mariner 9 70-mm photography, reproduced at NSSDC on 16-mm microfilm for catalog purposes. The indexes are arranged in six different sorts : (1) principal point latitude, (2) principal point longitude, (3) DAS time, (4) MTVS roll and file number, (5) IPL roll and process time, and (6) comments. Each sort contains the parameters listed above and, in addition, gives the revolution number.

Data set name - IPL MICROFICHE CATALOG OF SELECTED PHOTOGRAPHY

NSSDC ID 71-051A-04J, IPL/RDR MICROFICHE CATALOG

Time period covered - 11/14/71 TO 08/06/72
(Date supplied by experimenter)

Quantity of data - 251 CARDS OF B/W MICROFICHE

This data set consists of the best Mariner 9 photography on microfiche from the IPL/RDR. The first card contains explanations of data for this microfiche catalog. The quality of reproduction is sufficient for some scientific studies to be made directly from them.

Data set name - SEDR FINAL SUPPORT DATA ON MAGNETIC TAPE

NSSDC ID 71-051A-04K, SEDR FINAL DATA TAPE

Time period covered - 11/12/71 TO 10/18/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of the final and most correct support data tape for the Mariner 9 photography. The tape was written in 7-track, binary code at 556 bpi on an IBM 360. The contents of the tape supersede any other support data, such as the records on the data blocks on the imagery, or those on the reduced data records (RDR). The information given is similar to that contained in data set 71-051A-04H.

Data set name - CATALOG OF MTVS PHOTOGRAPHY ON MICROFILM

NSSDC ID 71-051A-04L, CATALOG OF MTVS PHOTOS ON MFILM

Time period covered - 11/09/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 20 REELS OF MICROFILM

This data set consists of the complete Mariner 9 MTVS photography on 16-mm film for catalog purposes. Generally, three renditions of each frame are given: (a) raw, (b) albedo rectified, and (c) high pass filtered (for maximum discrimination). The quality is very good, and the photos can be directly used for some scientific purposes.

Data set name - PRESS RELEASE PHOTOGRAPHS ON BLACK AND WHITE FILM

NSSDC ID 71-051A-04M, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 11/10/71 TO 08/06/72
(Date supplied by experimenter)

Quantity of data - 62 B/W NEGATIVE FRAMES

This data set consists of 4- by 5-in. black and white negatives of the press-released Mariner 9 photographs and mosaics from JPL. Included among these photographs are seven color ones of models made from Mariner 9 photographs and other experimental data. These frames are copied from a film entitled "Mars: The Search Begins." The designations are a JPL-PIO system of numbers unrelated to the DAS or frame number system used on the originals. The photos are of interesting and unusual features, e.g., Olympus Mons and the other great volcanoes or areas; and they include the two Martian satellites. Large strips of the Martian surface are included in mosaic. The quality of the photography is very good.

Data set name - MOSAIC PHOTOGRAPHS AND INDEX CATALOG ON 16-MM MICROFILM

NSSDC ID 71-051A-04N, MOSAIC CATALOG + INDEX ON MFILM

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of JPL-prepared mosaic boards of selected areas of the Martian terrain together with an index on 16-mm microfilm. The photographic mosaics are grouped according to specific geographical areas and were filmed from 4- x 5-in. negatives (data set 71-051A-04G). The index consists of two listings which are identical in content. The first is ordered by mosaic number and the second by DAS time. This mosaic catalog enables users to identify those mosaics for which they require higher quality reproductions.

Data set name - LIMB INDEX WITH SUPPORT DATA ON MICROFICHE

NSSDC ID 71-051A-04O, LIMB INDEX W/SUPPORT DATA, MFICHE

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 16 CARDS OF B/W MICROFICHE

This data set consists of B/W positive microfiche cards indexing the complete set of limb photography from the Mariner 9 IPL reduced data found in data set 71-051A-04P. Each frame contains the support data that all Mariner 9 photography possesses. The listings are ordered by IPL roll number and SEDR/DAS time.

Data set name - LIMB PHOTOGRAPHY CATALOG ON B/W MICROFICHE

NSSDC ID 71-051A-04P, LIMB MICROFICHE CATALOG

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 166 CARDS OF B/W MICROFICHE

This data set consists of microfiche of the Martian limb photography. In addition to the photographic imagery, there are plots of limb profiles, supporting data blocks for the photographs, and supporting data for the plots. The data blocks for the photography contain the following information : picture number, DAS time, altitude, view zenith angle, center and corner coordinates, year, day, month, UT time, filter, picture height and width in km on the surface, phase angle, process data, and IPL number. The data blocks on the limb profile plots contain the following information : DAS time, filter, limb abscissa, plot line number, local time, longitude and latitude, line sample, illumination angle, phase angle, sun azimuth, scale, start line, start sample, end line, and end sample. The imagery is generally very good, including the plots and the data blocks. Occasionally some of the letters bleed a little in the data blocks, but even these should be legible.

Data set name - SELECTED MTVS AND IPL PHOTOGRAPHY ON MICROFICHE FROM CAL TECH

NSSDC ID 71-051A-04Q, CAL TECH SELECTD MTVS+IPL PHOTOS

Time period covered - 11/13/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 465 CARDS OF B/W MICROFICHE

This data set consists of microfiche, selected by Cal Tech personnel representing the best frames from the MTVS and IPL reproductions. Most of the photographs are the albedo-stretched and maximum-discrimination versions of the original imagery. Included with the photographs are gray scales, quadrant maps, and supporting data for the images that appear on each card. The supporting data contain the following information: picture identification, DAS time, orbit number, camera, filter, roll and file number (MTVS), data pictures footprints (maps), corner coordinates, slant range, viewing angle, resolution, solar lighting angle, phase angle, local

time of the center from midnight, sun direction in the image, direction of north in the image, and exposure interval. The time period covered is from November 12, 1971 (far-encounter photos), to October 27, 1972. The supporting data in these cards are equivalent to the SEDR data, which are therefore the most correct. The photographic imagery is generally very good. The footprint and supporting data imagery vary from fair to poor. These microfiche are for catalog purposes, but the imagery may be useful in some areas of research.

Data set name - USGS SEMI-CONTROLLED MOSAICS

NSSDC ID 71-051A-04R, USGS SEMICONTROLLED MOSAICS

Time period covered - (N/A)

Quantity of data - 30 PAGES OF UNBOUND HARDCOPY

This data set consists of 30 quadrangles of semi-controlled paper photomosaic maps of the Martian surface, ordered by quadrangle map number, e.g., MC-1. Each quadrangle (on 76- x 91cm [30-x 36-in.] paper) consists of (1) the photomosaic map, and (2) the individual, unrectified B-camera (high resolution) frames that comprise the map. The individual frames are on a 110-x 15-cm (4-x 6-in.) format and are identified by DAS number. The mosaic maps are made with computer-enhanced photos, rectified and scaled to polar stereographic projection near the poles, Lambert conformal projection for midlatitudes, and Mercator projection for low latitudes. Descriptions of methods used are included on each map. The location and scale of each quadrangle with respect to the Martian surface are indicated in an insert map.

Data set name - SHADED RELIEF MAPS OF MARS ON 24X30-INCH PHOTOGRAPHIC PAPER

NSSDC ID 71-051A-04S, SHADED RELIEF MAPS

Time period covered - 01/01/72 TO 10/28/72
(As verified by NSSDC)

Quantity of data - 54 PAGES OF UNBOUND HARDCOPY

This data set consists of shaded relief section maps of the Martian surface with the Mariner 9 photography as a base. A coordinate grid accompanies each section. The maps are mosaicked photographs. Albedo differences between photographs comprising the mosaics are obvious, and users are advised to be cautious in interpreting albedos or color properties of the surface from these maps. The quality is very good.

Data set name - PICTURE AND ENHANCEMENT CATALOG ON MAGNETIC TAPE

NSSDC ID 71-051A-04T, PICTURE + ENHANCEMENT DATA TAPE

Time period covered - 10/09/71 TO 10/17/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of a magnetic tape of the picture and enhancement catalog for Mariner 9. The tape is 556 bpi, binary, 7 track, and created on an IBM 360 computer. Each record on the tape is divided into three sections. Section 1, level 1, occurs one time for each picture. Two of the fields it contains, PL count (Image Processing Laboratory count) and MTV count (Mariner 71 TV-picture count), reflect the number of entries in the other two sections. Segment 2, level 2, contains entries which reflect the number and type of processing of a picture by the Image Processing Laboratory. Segment 3, level 2, contains entries which reflect the number and type of MTVS frames on which a picture exists (usually three or four).

Data set name - MARINER 9 JPL MOSAIC CATALOG AND INDEX ON MICROFICHE

NSSDC ID 71-051A-04U, JPL MOSAIC CATALOG + INDEX MFICHE

Time period covered - 11/10/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 7 CARDS OF B/W MICROFICHE

This data set consists of JPL prepared mosaic boards of selected areas of the Martian terrain together with an index on microfiche. The photographic mosaics are grouped according to specific geographical areas and were filmed from 4- x 5-in. negatives (71-051A-04G). The index consists of two listings which are identical in content. The first is ordered by mosaic number and the second by DAS time. This mosaic catalog enables users to identify those mosaics for which they require higher quality reproductions.

Data set name - REDUCED DATA RECORDS STATUS INDEX ON MICROFILM

NSSDC ID 71-051A-04V, RDR PRODUCTS (STATUS)

Time period covered - 11/09/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set is an index of the mission status of the reduced data record (RDR) for Mariner photography copied on 16-mm microfilm from computer listing hardcopy supplied by JPL. The index is ordered in two ways, by IPL roll no. and by DAS time, and contains the following information (ordered by roll no.) in columns : (1) roll no., (2) processing time, (3) DAS time, (4) revolution no., (5) camera, (6) no. of frame in revolution, (7) total pictures in revolution, (8) DSPL, (9) cumulative picture no., (10) enhancement 1, (11) enhancement 2, and (12) RDR status. The listing by DAS time is preceded by an explanation of terms in the status column.

Data set name - IMAGE PROCESSING LABORATORY PHOTOGRAPHY ENHANCEMENT INDEX ON MICROFILM

NSSDC ID 71-051A-04W, IPL ENHANCEMENT CATALOG

Time period covered - 11/09/71 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set is an index catalog of the IPL enhancement processing of Mariner 9 photography supplied by JPL in the form of a computer printout reproduced onto 16-mm microfilm. The index listing, ordered by processing time contains the following information: (1) processing time, (2) DAS time, (3) processing date, (4) roll no., (5) enhancement 1, (6) enhancement 2, (7) enhancement 3, (8) enhancement 4, (9) enhancement 5, (10) enhancement 6, (11) enhancement 7, (12) output tape, (13) tape file, and (14) remarks. No explanatory notes are included. The material is generally legible.

Data set name - MARS GLOBE PHOTOMOSAICS

NSSDC ID 71-051A-04X, MARS GLOBE PHOTOMOSAICS

Time period covered - 01/01/72 TO 10/27/72
(Date supplied by experimenter)

Quantity of data - 432 B/W NEGATIVE FRAMES

This data set from JPL consists of photographs taken from the Mars globe, which was constructed from photomosaics of Mariner 9 photography. The photographs comprising the photomosaics are primarily from photos taken after the dust storm had started to subside and features began to appear. The mosaics cover all of Mars, including the polar caps.

Data set name - MARS GLOBE PHOTOMOSAIC INDEX ON MICROFICHE

NSSDC ID 71-051A-04Y, MARS GLOBE PHOTOMOSAIC INDEX

Time period covered - (N/A)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set is the index of the photomosaics that made up the NASA-JPL Mars globe. It is broken down into several provinces. Sections 1, 2, 3, 6, 7, 8, and 9 are areographic (Mars geographic) areas, and sections 4 and 5 are the volcanic and canyon lands provinces. Contained in the indexes are (1) grouping order (serial number), (2) areographic latitude, (3) areographic longitude, and (4) frame number. In the cases of the volcanic and canyon lands indexes, only the grouping order and frame number are given.

Data set name - INDEX OF IMAGES BY 10 DEGREE BOX

NSSDC ID 71-051A-04Z, INDEX OF IMAGES BY 10 DEGREE BOX

Time period covered - (N/A)

Quantity of data - 3 CARDS OF B/W MICROFICHE

This data set consists of a listing of Mariner 9 images sorted by 10-deg boxes. These boxes contain all images obtained for the designated center latitudes and longitudes where the center latitude is held fixed and the center longitude varies in 10-deg increments. The columns of data are: (1) picture number (picno), (2) DAS number, (3) latitude

(lat5), (4) longitude (lon5), (5) emission angle (ema5), (6) incidence angle (ina5), (7) range, and (8) Mars time. This data set acts as an index of all of the photography for areas on Mars of 10 deg square.

Data set name - PLANETARY IMAGE DATA ON MAGNETIC TAPE
(*)

NSSDC ID 71-051A-04a, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 11/14/71 TO 10/22/72
(As verified by NSSDC)

Quantity of data - 34 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 7300 images obtained by the Mariner 9 TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 22 blocks containing 31,944 bytes per block. Each block is composed of 33 logical records of 968 bytes each. The first logical record of the first block contains a label. The labels are followed by 700 logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by DAS time, a spacecraft clock count, against tape/file position. For this reason, it is necessary to be able to identify the DAS times of interest before placing an order.

MARINER 9, NEUGEBAUER
INFRARED RADIOMETER (IRR)

Data set name - INFRARED RADIOMETER 10 AND 20 MICRON BRIGHTNESS/TEMPERATURE DATA ON TAPE

NSSDC ID 71-051A-01A, 10 AND 20MICRON BRIGHT TEMP-MTAPE

Time period covered - 11/14/71 TO 03/27/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one 9-track, binary, 1600-bpi magnetic tape created on an IBM 370/155 computer. The data are contained on 13 files. The tape has variable length spanned blocked records with a maximum physical record length of 7204 bytes, including a 4-byte block descriptor word. Each logical record consists of 14 4-byte integer words containing (1) DAS time of measurement; (2) brightness temperature; (3) latitude, longitude and local time on Mars; (4) field-of-view correction; (5) limb, incidence, emission and phase angles; and (6) the number of measurements used to get temperature for each record. All geometrical quantities are as specified in JPL document no. 900-588, dated September 20, 1972.

********** MARINER 10 **********

MARINER 10, BRIDGE
MEASUREMENT OF PLASMA ENVIRONMENT

Data set name - MARINER,VENUS,MERCURY PLASMA DETAIL TAPE

NSSDC ID 73-085A-03A, MVM PLASMA DETAIL TAPE

Time period covered - 03/28/74 TO 03/16/75
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These plasma detail data are contained on magnetic tape written at 6250-bpi, 9-track, binary. The data were created on an IBM 360 computer with a physical record size of 31,200 bytes. There are 100 logical records per physical record. Each record contains time in month, day, year, hour, minute, second and millisecond of day; decimal day; angle for each energy step; channeltron count; command and status words; temperature, density, alpha, and gamma halo; magnetic vectors; and magnetic data availability, time validity, and data flags.

MARINER 10, BROADFOOT
EUV SPECTROSCOPY

Data set name - HYDROGEN-HELIUM INTERPLANETARY EMISSION DATA ON MAGNETIC TAPE

NSSDC ID 73-085A-05A, INTERPLANETARY EMIS H-HE, ON TAPE

Time period covered - 11/06/73 TO 01/28/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This 7-track, 800-bpi, BCD tape was supplied by the experimenter and contains the data used to generate the four data figures in his paper, "The Interstellar Wind: Mariner 10 Measurements of H (1216A) and He (584A) Interplanetary Emission," submitted to The Astrophysical Journal (1977). The tape contains four files, one file for each roll calibration maneuver (RCM). The number of records per file varies but is near 1000. Each record contains the background photoelectron events per 21 s, the number of helium photoelectron events per 21 s, the number of hydrogen photoelectron events per 21 s, right ascension, and declination. One rayleigh of emission yields 0.36 photoelectron events per second for helium (584A) and 0.033 photoelectron event per second for hydrogen (1216A). File 1 contains data for November 6, 1973; file 2 contains data for December 7, 1973; file 3 has data for December 19, 1973; and file 4 has data for January 28, 1974.

MARINER 10, CHASE, JR.
TWO-CHANNEL IR RADIOMETER

Data set name - INFRARED RADIOMETER DATA OF MERCURY ON MAGNETIC TAPE

NSSDC ID 73-085A-06A, IR RAD. DATA OF MERCURY ON TAPE

Time period covered - 03/29/74 TO 03/29/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one 9-track, 1600-bpi, EBCDIC magnetic tape recorded on an IBM 370/158 computer. Each record consists of 92 8-bit characters. File 1 of the tape contains data from the Mercury forward pass. File 2 contains data from the Mercury aft pass. Each logical record contains S/C GMT time in hours, minutes, and seconds; latitude, longitude, and local time on Mercury; emission angle; slant range; limb angle; and field of view correction and brightness temperatures for two channels. These and other data are also held by E. D. Miner, Jet Propulsion Laboratory, Pasadena, California, to whom requesters are referred.

Data set name - INFRA-RED RADIOMETRIC DATA OF VENUS

NSSDC ID 73-085A-06B, IR RADIOMETRIC DATA OF VENUS

Time period covered - 02/05/74 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of two published papers by the principal investigator and colleagues. They contain results and the reduced data obtained for the IR Radiometer experiment and contain the only data that NSSDC will receive for Venus from this experiment. The meager data obtained for Venus were mainly used for calibration of Mercury data obtained in the mission. In the publications the results are presented as graphs of (1) the 45 micrometers intensity vs Venusian longitude, (2) Venus coordinates of the viewed point on the planet, (3) temperature vs height above surface, (4) radiance measurements for both 11 and 45 micrometers channels vs longitude and vs cos phi, (5) difference between the measured radiance at 45 micrometers and the limb-darkening law vs long., (6) optical depth vs height above surface for both channels, and (7) cloud particle density vs height above the surface. Brightness temperature, opaqueness, limb-darkening, and implications are given. The two papers have been microfiched in tandem and are available in that format from NSSDC. The two publications are from Science, v. 183, pp. 1291-2, 1974, and J. Atmosph. Sciences, v. 32, pp. 1101-6, 1975. These and other data are also held by E. D. Miner, Jet Propulsion Laboratory, Pasadena, California, to whom requesters are referred.

Data set name - INFRA-RED RADIOMETRIC DATA OF MERCURY

NSSDC ID 73-085A-06C, IR RADIOMETRIC DATA OF MERCURY

Time period covered - 03/29/74 TO 03/29/74
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of two published papers by the principal investigator and colleagues containing results derived from the data of the IR Radiometer experiment on

Mariner 10 for Mercury on the first pass, which was the only pass with data. Plots are given of (1) brightness temperature at 45 micrometers vs local time for the forward (a) and aft (b) beams, (2) overlap data of the intensity of the two beams vs local time, (3) geometry of the flyby for March 29, 1974, (4) adopted response of the 45 micrometers channel to off-axis radiation angle, (5) trace of the forward beam across Mercury, (6) brightness temperature of forward and aft beams vs Mercury longitude, (7) surface temperatures vs longitude for both 11 and 45 micrometers channels, (8) nighttime surface temperatures vs longitude, and (9) nighttime surface temperatures compared with a homogeneous surface of a given thermal inertia. Also tables of representative data points at longitude, latitude, and times give the brightness temperatures, slant range for both channels, small-scale thermal features characteristics, and characteristics of the radiometer system are presented. The two publications are Science, v. 185, pp. 142-145, 1974, and Icarus, v. 28, n. 4, pp. 565-578, 1976. These and other data are held by E. D. Miner, Jet Propulsion Laboratory, Pasadena, California, to whom requesters are referred.

MARINER 10, HOWARD
S- AND X-BAND RADIO PROPAGATION

Data set name - FINAL PLOTS AND LISTINGS OF VENUS OCCULTATION DATA, ON MICROFILM

NSSDC ID 73-085A-02A, VENUS OCCULT-FINAL PLTS/LSTS MFLM

Time period covered - 12/04/73 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained on 16-mm microfilm and consists of listings of the outputs of the intermediate and final programs used to analyze Mariner 10 data resulting from occultations of Venus. These data include the derived atmospheric parameters (e.g., temperature, pressure, lapse rate) that appear nowhere else. Other outputs, resulting from intermediate programs, are also listed. These data were received from the principal investigator. Included on this reel of microfilm are data from the Pioneer 10 occultation of Io.

Data set name - INTERMEDIATE DATA FILES OF VENUS OCCULTATION DATA, ON MAGNETIC TAPE

NSSDC ID 73-085A-02B, RED TELE SIGNAL DATA, VENUS OCCLT

Time period covered - 02/05/74 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 27 REELS OF TAPE

This data set is contained on 27 magnetic tapes supplied by the principal investigator. These tapes are 9-track, 800-bpi, odd-parity tapes generated on a Univac 1108 computer. These tapes were prepared by sampling the analog spacecraft signal and time from analog-recorded tapes. The sample rate is 160,000 samples/s for both S-band and X-band. The data on the tapes are a digital representation of recorded signals received from the spacecraft, the time of reception (UTC), and header information. These are reduced data. These magnetic tapes contain only the data from the Venus occultation.

Data set name - REDUCED TELEMETRY SIGNAL DATA FOR VENUS OCCULTATIONS, ON MAGNETIC TAPE

NSSDC ID 73-085A-02C, VENUS OCCULTATION, INTERMED. DATA

Time period covered - (N/A)

Quantity of data - 2 REELS OF TAPE

This data set was generated by the principal investigator using the Mariner 10 radio-occultation data as input to a subset of the occultation software. The software removed drift and bias from frequency residuals, computed bending angle, ray-asymptote distance, power corrections, and refractivity as a function of radius to the center of the planet Venus. This data set is contained on one 7-track, 800-bpi, binary magnetic tape generated on a Univac 1108 computer.

Data set name - REDUCED MERCURY OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 73-085A-02D, MERC.OCCULT - RED.TM SIGNALS,TAPE

Time period covered - 03/29/74 TO 03/29/74
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set is contained on magnetic tapes supplied by the principal investigator. These tapes are 9-track, 800-bpi, odd-parity tapes generated on a Univac 1108 computer. These tapes were prepared by sampling the analog spacecraft signal and time from analog-recorded tapes. The sample rate is 160,000 samples/s for both S-band and X-band. The data on the tapes are a digital representation of recorded signals received from the spacecraft, the time of reception (UTC), and header information. These are reduced data. These magnetic tapes contain only the data from the Mercury occultation.

MARINER 10, MURRAY
TELEVISION PHOTOGRAPHY

Data set name - MARINER 10 CALIBRATION SEQUENCE PHOTOS OF EARTH AND MOON ON 70MM FILM

NSSDC ID 73-085A-01A, EARTH/MOON CALIBRATION SEQ 70-MM

Time period covered - 11/03/73 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 918 B/W POSITIVES

This data set is the calibration photography for the Mariner 10 mission on 70-mm black and white film. The earth and moon were used for calibration along with frames of gray scales. Each frame contains a data block of supporting data to the right of the photo and gray scales at the bottom for original and for stretched (albedo) versions. The data block contains the following information: first row--MTCF (Mission Test Computer Facility) identifier and mission identifier; second row --day no., h, m, s, and ms and Flight Data System (FDS) count (similar to the Mariner 9 Data Automation Set (DAS) no.); third row--spacecraft data transmission mode, imaging system mode, bit rate (117 = 117.6 kbps, 22 = 22.05 kbps, 7 = 7.35 kbps), and editing mode (ss = skip-slide, cs = center strip); fourth row--first in-synch line/last in-synch line, no. of good lines/no. of bad lines/no. of missing lines, total = 700; fifth row --bit error (blank in system test phase) and no. of spikes (blank in system test phase); sixth row--camera designation, exposure time in s and ms, and filter position and type; seventh row--cathode beam status (off or on), camera flooding light status A and B (camera A and B on), A (camera A on, camera B off), B (camera B on, A off), off (both off), and calibration mode status (off or on); eighth row--filter step command (0, 1, 2, or error) and dark current (dc) status (off or on); ninth row--camera (A then camera B) temperature control status (low, high, both, or error); tenth-fourteenth rows--data nos. of 10 TVS housekeeping measurements; fifteenth-nineteenth rows--processing versions (raw, stretched (albedo) or AGC or High Pass Filtered (HPF) [maximum discrimination]), filter size in picture elements (blank for raw), type of stretch (none, manual auto [end search] es or auto [center search] cs), input parameters for specified stretch, resulting end points of stretch used (equating input no. [0-255] with output level [0-63]), translation table identifier (tt0 [none], tt1, tt2, or tt3), HPF transference factor (blank for other than high pass) giving percentage of HPF output used, blemishes removed (blank if not selected) used on HPF or AGC only, and radiance contouring type identifier (none, line [= linear], log [= logarithmic]), twentieth (last) row--day, month, year of processing by MTCF, and 7000 series number. The two bottom gray scales show, left--full range of gray scale; right--stretched range. The original numbering system was a 7000 series. Several rolls were spliced together to form a larger roll. These larger rolls were designated by a 9000-series numbering system. The latter frame number is imprinted in large bold-faced type in the space between the gray scales (the roll is preceded by the 9000 number system). These two series numbers will be cross-referenced so that requests may be made by either number. The 7000-series number appears in the last row in the data block.

Data set name - MARINER 10 CALIBRATION SEQUENCE PHOTOS OF EARTH AND MOON ON MICROFICHE

NSSDC ID 73-085A-01B, EARTH/MOON CALIBRATION SEQ, FICHE

Time period covered - 11/03/73 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 16 CARDS OF B/W MICROFICHE

This data set is the calibration photography for the Mariner 10 mission on microfiche. The earth and moon were used for calibration along with frames of gray scales. The raw (r), high-pass filtered (h), and vertical AGC (v) are displayed together for one FDS time. The frames have a 7-digit number, which is preceded by a camera ID letter (A for wide angle, B for narrow angle) and followed by a letter identifying imagery

version. Below each frame are two graphs: one (left) indicating data input gray scale, and the other (right) indicating film output gray scale.

Data set name - MARINER 10 PHOTOS OF VENUS ON 70MM FILM

NSSDC ID 73-085A-01C, VENUS ENCOUNTER PHOTOS, 70-MM

Time period covered - 02/05/74 TO 02/10/74
(Date supplied by experimenter)

Quantity of data - 7187 B/W POSITIVES

This data set is the photography of Venus for the Mariner 10 mission on 70-mm black-and-white film. Each frame contains a data block of supporting data to the right of the photo and gray scales at the bottom for original and for stretched (albedo) versions. The data block contains the following information: first row--MTCF (mission test computer facility) identifier and mission identifier; second row--day no., h, m, s and ms and flight data system (FDS) count (similar to the Mariner 9 data automation set (DAS no.)); third row--spacecraft data transmission mode, imaging system mode, bit rate (117 = 117.6 kbps, 22 = 22.05 kbps, 7 = 7.35 kbps) and editing mode (ss = skip-slide, cs = center strip); fourth row --first in-synch line/last in-synch line, no. of good lines/no. of bad lines/no. of missing lines, total = 700; fifth row--bit error (blank in system test phase) and no. of spikes (blank in system test phase); sixth row --camera designation, exposure time in s and ms, and filter position and type; seventh row--cathode beam status (off or on), camera flooding light status A and B (camera A and B on), A (camera A on, camera B off) B (camera B on, A off), off (both off), and calibration mode status (off or on); eighth row--filter step command (0, 1, 2, or error) and dark current (dc) status (off or on); ninth row--camera (A then camera B) temperature control status (low, high, both, or error); tenth-fourteenth rows --data nos. of 10 TVS housekeeping measurements; fifteenth-nineteenth rows--processing versions (raw, stretched (albedo), or AGC or high pass filtered (HPF) (maximum discrimination)), filter size in picture elements (blank for raw), type of stretch (none, manual auto es (end search) or auto cs (center search), input parameters for specified stretch, resulting end points of stretch used (equating input no. [0-255] with output level [0-63]), translation table identifier (tt0 [none] tt1, tt2, tt3), HPF transference factor (blank for other than high pass) giving percentage of HPF output used, blemishes removed (blank if not selected) used on HPF or AGC only, and radiance contouring type identifier (none, line [= linear], log [= logarithmic]); twentieth (last) row --day, month, year of processing by MTCF, and 7000 series number. The two bottom gray scales show -- left - full range of gray scale;-- right,- stretched range. The original numbering system was a 7000-series. Several rolls were spliced together to form a larger roll. These larger rolls were designated by a 9000-series numbering system. The latter frame number is imprinted in large bold-faced type in the space between the gray scales (the roll is preceded by the 9000 number system). These two series numbers will be cross-referenced so that requests may be made by either number. The 7000-series number appears in the last row in the data block. These data are available in digital tape form from Susan La Voie, mailstop 168-514, Jet Propulsion Laboratory, Pasadena, California.

Data set name - MARINER 10 PHOTOS OF MERCURY ON 70MM FILM

NSSDC ID 73-085A-01D, MERCURY 1ST ENCOUNTER 70-MM

Time period covered - 03/29/74 TO 04/02/74
(Date supplied by experimenter)

Quantity of data - 2946 B/W POSITIVES

This data set consists of the first-encounter photography of Mercury from Mariner 10. Each frame contains the picture image, two gray scales below it, and a data block to the right of the picture. One gray scale (left) is the data input, and the other gray scale (right) is the film output. The camera designation and frame number are printed below the picture frames. The photography of the pictures and gray scales is very good, but the printing of the frame number and gray scale values is poor; in some cases the printing is so faint that it is almost illegible. The data block printing is adequate. These data are available in digital tape format from Susan La Voie, mailstop 168-514, Jet Propulsion Laboratory, Pasadena, California.

Data set name - PRESS RELEASE PHOTOS OF MERCURY + VENUS

NSSDC ID 73-085A-01E, PR PHOTOS OF MERC AND VENUS

Time period covered - 02/04/74 TO 04/03/74
(Date supplied by experimenter)

Quantity of data - 44 B/W POSITIVE FRAMES

This data set is composed of 4- x 5-in. photos of Venus and Mercury released by JPL. The photos are both far and near encounter images. Those of Venus show views of its cloud structure but no surface details. The far images of Mercury show its distant moon-like appearance, while close-up photos reveal ridge and rille patterns not found on the moon or any other planet investigated so far (including the earth). The quality is generally good. The identification numbers of these photos were assigned by the Public Information Office (PIO) of NASA, and are independent from the NSSDC identification system. The photos may be ordered by the PIO number.

Data set name - PHOTOGRAPHY OF MERCURY FROM SECOND ENCOUNTER ON 70MM FILM

NSSDC ID 73-085A-01F, MERCURY 2ND ENCOUNTER 70-MM

Time period covered - 09/23/74 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 1518 B/W POSITIVES

This 70-mm B/W photography of Mercury is from the Mariner 10 second-encounter (September 23, 1974) in a format similar to that for Mariner 9 Mars photography. Each FDS image is presented in three versions. There are two frame numbering systems: the original 7000 series, on the last line of the data block, and the 9000 series, in bold type between the two output graphs below the photographs. The left graph contains the data-input shading scale, the right graph, the film output shading scale. The data block gives the following information: photography lab, day of year, h, min, and s, FDS numbering system, mode and rate, camera, calibration information, errors, camera system information, type of rendition, stretch factors, amount of translation, radiance level, 7000 series, frame number, and date of processing. These data are also available in digital tape format from L. Pieri, at the RPIF, Building 264, Room 115, Jet Propulsion Laboratory, Pasadena, California.

Data set name - MARINER 10 PHOTOGRAPHY OF VENUS ON MICROFICHE

NSSDC ID 73-085A-01G, VENUS ENCOUNTER MICROFICHE

Time period covered - 02/05/74 TO 02/05/74
(Date supplied by experimenter)

Quantity of data - 120 CARDS OF B/W MICROFICHE

These numbered microfiche cards contain three versions of the Mariner 10 Venus-encounter photography. Each frame has a vertical and horizontal scale (0 to 700 on the ordinate and 0 to 800 on the abscissa) and contains one version of imagery in the following order: (1) raw photograph (R), (2) high-pass filter (H), then (3) vertical AGC (V), which is generally the most detailed version. The three versions have the same 7-digit frame number, which is preceded by a camera ID letter (A for wide angle, B for narrow angle) and followed by a letter identifying imagery version. Below each frame are two graphs: one (left) indicating data input gray scale, and the other (right) indicating film output gray scale.

Data set name - MERCURY FIRST ENCOUNTER ON MICROFICHE

NSSDC ID 73-085A-01H, MERCURY 1ST ENCOUNTER MICROFICHE

Time period covered - 03/29/74 TO 03/29/74
(Date supplied by experimenter)

Quantity of data - 50 CARDS OF B/W MICROFICHE

These numbered microfiche cards contain three versions of the Mariner 10 first encounter Mercury photography. Each frame has a vertical and horizontal scale (0 to 700 on the ordinate and 0 to 800 on the abscissa) and contains one version of imagery in the following order: (1) raw photograph (R), (2) high-pass filter (H), then (3) vertical AGC (V), which is generally the most detailed version. The three versions have the same 7-digit frame number, which is preceded by a camera ID letter (A for wide angle, B for narrow angle) and followed by a letter identifying imagery version. Below each frame are two graphs: one (left) indicating data input gray scale, and the other (right) indicating film output gray scale.

Data set name - MERCURY 2ND ENCOUNTER MICROFICHE

NSSDC ID 73-085A-01I, MERCURY 2ND ENCOUNTER MICROFICHE

Time period covered - 09/21/74 TO 09/21/74
(Date supplied by experimenter)

Quantity of data - 26 CARDS OF B/W MICROFICHE

This data set consists of the second-encounter photography of Mercury from Mariner 10 reproduced in microfiche form for use as a catalog. Each frame of microfiche contains the picture image and two gray scales below it. One gray scale (left) is the data input, and the other gray scale (right) is the film output. The camera designation and frame number are printed below the picture frames. The photography of the pictures and gray scales is very good, but the printing of the frame number and gray scale values is poor; in some cases the printing is so faint that it is almost illegible.

Data set name - INDEXES OF MARINER 10 PHOTOGRAPHY ON 16MM FILM

NSSDC ID 73-085A-01J, INDEXES OF DATA

Time period covered - 02/05/74 TO 09/21/74
(Date supplied by experimenter)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of eight listings of the same parameters, each ordered separately for the Mariner 10 Mercury-Venus photography on 16-mm microfilm and includes the calibration, Venus and Mercury (through second-encounter) photography. The eight parameter listings are (1) FDS counting no., (2) spacecraft (S/C alt.), (3) latitude, (4) longitude, (5) view angle, (6) solar lighting angle, (7) roll and file no., and (8) spacecraft event time, given as day of year, h, m, s, and ms. The parameter relationships to the photograph are given in a diagram at the beginning of each listing. The headings for each column in the tables are (1) the column by which sorted, e.g., (1) latitude, (2) longitude, (3) spacecraft altitude, (4) FDS count, (5) spacecraft event day and time, (6) camera designation, (7) exposure time, (8) filter code, (9) picture type (raw, vertical AGC, or high pass filter), (10) view angle, (11) light angle, and (12) roll and file no. If any of the eight parameters of sorting are known, the photograph can be retrieved on request, though the preferred parameter is roll and file number.

Data set name - MERCURY THIRD ENCOUNTER PHOTOS ON 70-MM BLACK AND WHITE FILM

NSSDC ID 73-085A-01K, MERCURY 3RD ENCOUNTER 70-MM

Time period covered - 03/12/75 TO 03/17/75
(Date supplied by experimenter)

Quantity of data - 1047 B/W POSITIVES

This data set consists of photography of Mercury obtained at the third and last encounter of Mercury by Mariner 10 when the spacecraft approached within 200 km of the planet's surface. These photographs contain the highest resolution (approx. 100 m) of the three encounters. The photography is good. Beside the picture, of which three versions are given--(a) raw, (b) high pass filter and (c) vertical AGC)--is a data block which gives the following information: MTCF (Mission Test Computer Facility) identifier, mission identifier, day no., hour, minute, second, and milliseconds, FDS (Flight Data System) count, spacecraft data transmission mode, imaging system mode, bit rate, editing mode, first in-synch line/last in-synch line, no. of good lines/no. of bad lines/no. of missing lines, bit error, no. of spikes, camera designation, exposure time, filter position and type, cathode-beam status, camera flooding light status, calibration mode, filter step command, dark current status, housekeeping measurements, process version, filter size, type and input of stretch parameters, translation table, filter transference factor, blemishes removed, radiance contouring, year, month, and day of processing. (See Brief Description of 73-085A-01A for fuller description.) Below the picture are two gray scales, the left one the full range and the right one the stretched scale. The numbering system is a 9000-series number and is imprinted in bold type between the gray scales. These data are also available in digital tape format from L. Pieri at the RPIF, Building 264, Room 115, Jet Propulsion Laboratory, Pasadena, California.

Data set name - SEDR SUPPORTING DATA FOR THE MTCF MARINER 10 PHOTOGRAPHY ON 16MM MICROFILM

NSSDC ID 73-085A-01L, MTCF SEDR SUPPORTING DATA M/FILM

Time period covered - 11/03/73 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are designated the Supplementary Engineering Data Records (SEDR) and are supporting data for the MTCF Mariner 10 photography. Included are supporting data for Venus and Mercury and supporting data for earth and moon calibration. Since three passes were made of Mercury, the data are identified according to passes. The data are preceded by a description of the contents, and corrections to errors in the Flight Data System (FDS) number are included. There are 29 parameters listed, such as camera-related data, spacecraft position data, and ground location data.

Data set name - SEDR SUPPORTING DATA FOR MARINER 10 IPL PHOTOGRAPHY ON 16MM MICROFILM

NSSDC ID 73-085A-01M, IPL SEDR SUPPORTING DATA, M/FILM

Time period covered - 11/03/73 TO 09/24/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are designated the Supplementary Engineering Data Records (SEDR) and are supporting data for the Mariner 10 Mercury photography processed by the Imaging Processing Laboratory (IPL). Each Mercury pass is identified. The 27 parameters include camera-related, spacecraft position-related and ground location-related data. Included also is a listing of photographic coverage divided into H-areas based on latitude and longitude divisions. Listed are the appropriate Flight Data System (FDS) frames and identifying passes for those areas.

Data set name - IPL/RDR PHOTOGRAPHY OF ALL MERCURY ENCOUNTERS FROM MARINER 10 ON 70MM FILM

NSSDC ID 73-085A-01N, MERCURY ENCOUNTERS IPL/RDR 70-MM

Time period covered - (N/A)

Quantity of data - 655 B/W POSITIVES

These data, on 70-mm film, come in two versions: the contrast-stretched or albedo version, and the high pass filtered version (HPF). These two processes were chosen to provide visually useful pictures of two different types. The contrast-stretched or albedo version portrays the RDR (reduced data record) with the relative brightness exaggerated in a linear fashion, but not distorted. This version would be of primary interest to investigators interested in surface albedo. The high-pass filtered version suppresses the large-scale variation in brightness and enhances the contrast of smaller features, which would be of primary interest to investigators interested in surface detail.

Data set name - IPL MERCURY STEREO PAIRS ORTHOGRAPHICALLY RECTIFIED AND CONTRAST-ENHANCED ON 70-MM

NSSDC ID 73-085A-01O, IPL MERCURY STEREO 70-MM

Time period covered - 03/29/74 TO 09/26/74
(As verified by NSSDC)

Quantity of data - 264 B/W POSITIVE FRAMES

This data set consists of 70-mm film of Mariner 10 stereo pairs of selected photography of Mercury. Each frame is orthographically rectified and contrast-enhanced and contains a data block. Processing and scaling parameters have been selected to preserve image resolution and maximize feature discriminability. Accompanying the imagery is a listing of the stereo pairs coverage which includes other parametric information such as latitude and longitude, date, time, and filters. Included with the supporting data are conic plots for each frame demonstrating graphically the position of each image on the planet's surface in latitude and longitude. Requesters for these data should write to NSSDC for the three-part document titled Mercury Stereo Data Package (82673G-000A) which contains Users Guide, SEDR, and conic plots, and is available in microfiche or on 16-mm microfilm (MP23690). This contains a listing of the stero pairs and an explanation of their use. Selections for reproductions in desired size may then be requested from NSSDC. Appropriate supporting data and conic plots will be supplied with the requested frames.

Data set name - SEDR SUBSET SUPPORT DATA FOR ALL PHOTOS ON MAGNETIC TAPE

NSSDC ID 73-085A-01P, SEDR SUBSET SUP. DATA FOR ALL PHO

Time period covered - 11/03/73 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These Supplementary Experiment Data Records (SEDR) subset support data are on magnetic tape written at 556 bpi, binary, 7-track and were created on an IBM 360/65 computer. The data

are time-ordered, unblocked, with a logical record of 284 bytes. Each logical record contains day of year, flight data subsystem count, year, camera ID, filter position, size, number, color, instrument ID, TV system serial no., measurement time at spacecraft, planet, and spacecraft ephemeris information.

Data set name - MERCURY ENCOUNTER IPL CALTECH MICROFICHE

NSSDC ID 73-085A-01Q, MERCURY IPL CALTECH MICROFICHE

Time period covered - 03/16/74 TO 09/21/74
(As verified by NSSDC)

Quantity of data - 17 CARDS OF B/W MICROFICHE

This data set consists of microfiche cards obtained from California Institute of Technology (Cal Tech) of Mariner 10 IPL photography of the third Mercury encounter and the corresponding support data for each photo. The first part of each card contains the photographs and the data block that accompanies each photograph. The other part of the card contains the matching support data (most accurate) for each photograph with two supporting data blocks per microfiche frame. All data are arranged in order of the Flight Data System (FDS) count. The supporting data are the following: FDS count, event time, manual code (lab ID), time from encounter (in seconds), altitude, local time at center (in hours), camera, direction of north in image (in degrees clockwise from 5-6, as designated on frame diagram), surface distance between points designated on frame diagram, latitude and longitude of corners and center point of frame, solar lighting, phase and viewing angles of the corner and center points, resolutions and slant ranges for the corner and center points. Quality is generally good except for card no. 4 which is badly blurred.

Data set name - MERCURY 3RD ENCOUNTER MICF CALTECH MICROFICHE

NSSDC ID 73-085A-01R, MERCURY 3RD ENCOUNTER MICROFICHE

Time period covered - 03/16/75 TO 03/16/75
(As verified by NSSDC)

Quantity of data - 18 CARDS OF B/W MICROFICHE

This data set consists of the third-encounter photography of Mercury from Mariner 10 reproduced in microfiche form for use as a catalog. Each frame contains the picture image and two gray scales below it. One gray scale (left) is the data input, and the other (right) is the film output. The camera designation and frame number are printed below the picture frames. The photography of the pictures and gray scales is very good, but the printing of the frame number and gray scale values is poor and almost illegible in some cases.

Data set name - PHOTOGRAPHY FROM ATLAS OF MERCURY.

NSSDC ID 73-085A-01S, PHOTOGRAPHY FROM ATLAS OF MERCURY

Time period covered - (N/A)

Quantity of data - 316 B/W NEGATIVE FRAMES

This data set consists of various-sized negatives and positives of the maps and photos contained in the atlas of Mercury prepared for NASA by M. E. Davies, S. E. Dwornik, G. E. Gault, and R. G. Strom (NASA SP-423). The atlas is in sections, designated H (for Hermes to distinguish from M which is used for Mars) and each section has a shaded relief map at scale 1:5,000,000. Some of the photos are mosaics and some are individual ones in high resolution. The map is followed by a computer-enhanced photomosaic (designated A) and in turn followed by high-resolution photos of smaller sections in the area (designated B and C). Some stereopairs are designated 1-1, 1-2 etc.; in each pair the first number points out the location of a region and the second number points out an area within the region. Footprints of the individual and stereo pairs are shown on the maps. The photos are from all encounters.

Data set name - PLANETARY IMAGE DATA ON MAGNETIC TAPE
(*)

NSSDC ID 73-085A-01T, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 11/03/73 TO 03/16/75
(As verified by NSSDC)

Quantity of data - 57 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 8500 images obtained by the Mariner 10 TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 22 blocks containing 31,944 bytes per block. Each block is composed of 33 logical records of 968 bytes each. The first logical record of the first block contains a label. The labels are followed by 700 logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by FDS count, a spacecraft event time, against tape/file position. For this reason, it is necessary to be able to identify the FDS counts of interest before placing an order.

MARINER 10, NESS
FLUXGATE MAGNETOMETERS

Data set name - 1.2 SEC RESOLUTION PLOTS, SEQ COORDINATES ON MICROFILM

NSSDC ID 73-085A-04A, 1.2 SEC PLOTS, SEQ COORDS, MFILM

Time period covered - 11/03/73 TO 04/14/74
(As verified by NSSDC)

Quantity of data - 3 REELS OF MICROFILM

This data set consists of 16-mm microfilm which contains 1 hour of 1.2-s average vector magnetic field data plots per frame (30 min across the frame, twice). The data consist of field latitude and longitude angles and standard deviations in quasi-payload coordinates (Z along spin axis, X along spacecraft-sun line). Listed each 30 minutes are spacecraft positions in solar ecliptic coordinates (Cartesian component and radial distance).

Data set name - HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTOR PLOTS

NSSDC ID 73-085A-04B, HR AVG INPL MAG VECTOR PLOTS

Time period covered - 11/03/73 TO 04/11/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of the GSFC X-692-76-208, "Mariner 10 Interplanetary Magnetic Field Measurements November 1973-March 1974" by K. W. Behannon and F. W. Ottens. The document contains two plots for each of six solar rotations. The plots contain hourly averaged field magnitude, field latitude and longitude angles in solar equatorial coordinates, and standard deviations. One plot per solar rotation is linear in time, and the other is linear in sub-spacecraft solar longitude. Two additional plots are given: one shows hourly averaged field magnitude, angles, and standard deviations vs spacecraft distance from the sun; and the other shows daily averages vs time.

Data set name - HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD VECTORS ON MAGNETIC TAPE

NSSDC ID 73-085A-04C, HR AVG INPL MAG VECTORS ON TAPE

Time period covered - 11/03/73 TO 04/15/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one 9-track, 800-bpi, IBM 360 card-image magnetic tape provided by the experimenter. Hourly averaged field vectors are given in solar equatorial coordinates through the prime data acquisition phase of the mission (i.e., through the first Mercury encounter). Data words given for each hour include time and spacecraft ephemeris words, average field magnitude, magnitude and direction angles of the average field vector, and standard deviations of the magnitude and Cartesian components.

Data set name - 42-SEC MAGNETIC FIELD VECTORS IN SEQ COORDINATES, MAGNETIC TAPES

NSSDC ID 73-085A-04D, 42 SEC DATA, SEQ COORDS, TAPE

Time period covered - 11/03/73 TO 04/09/74
(As verified by NSSDC)

Quantity of data - 32 REELS OF TAPE

This data set consists of 42-s averaged magnetic field vectors in solar equatorial coordinates on 9-track, 1600-bpi, binary, standard labeled magnetic tape. The data were recorded

on an IBM 360 computer. Each tape contains a header record of 10,152 bytes followed by data records of 11,652 bytes. Header records contain a satellite ID; day of year; milliseconds of the day of the first data record; year, day, and month of data generation; coordinate system of the data; cruise mode; low and high range; X, Y, and Z components; sensitivity levels for each sensor; magnetic coupling coefficients; Earth, Venus, and Mercury true orbit of date; Sun true equator of date; and radius of Earth, Venus, and Mercury in kilometers. The data records contain averages of the ambient magnetic field. Each record contains one 42-s average, seven 6-s averages, and thirty-five 1.2-s averages. Each data record also contains year and day-of-year of data of the beginning of the current 42-s block, housekeeping and status words, and data quality flags.

Data set name - 42-SEC MAGNETIC FIELD VECTORS NEAR VENUS ENCOUNTER IN VENUS-CENTERED COORDS, TAPES

NSSDC ID 73-085A-04E, 42 SEC DATA, VENUS COORDS, TAPE

Time period covered - 01/20/74 TO 02/06/74
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set consists of 42-s magnetic field vectors, Venus coordinates on 9-track, 1600-bpi, binary, standard labeled magnetic tape recorded on an IBM 360 computer. Each tape contains a header record of 10,152 bytes followed by data records of 11,652 bytes. Header records contain a satellite ID; day of year and milliseconds of the day of the first data record; year, day, and month of data generation; coordinate system of data; cruise mode, low and high range; X, Y, and Z components; sensitivity levels for each sensor; magnetic coupling coefficients; Earth, Venus, and Mercury true orbit of date; Sun true equator of date; and radius of the Earth, Venus, and Mercury in kilometers. The data records contain averages of the ambient field. Each record contains one 42-s average, seven 6-s averages, and thirty-five 1.2-s averages. Each data record also contains year and day of year of data; milliseconds of day of the beginning of current 42-s block; housekeeping and status words; and data quality flags.

Data set name - 6-S RESOLUTION FIELD COMPONENT, ANGLE, MAGNITUDE, AND RMS DEVIATION LISTINGS

NSSDC ID 73-085A-04F, 6 SEC LISTS, SEQ COORDS, MFILM

Time period covered - 11/03/73 TO 04/15/74
(As verified by NSSDC)

Quantity of data - 18 REELS OF MICROFILM

This data set consists of a listing on microfilm of 6-s averages in the solar equatorial coordinate (SEQ) system in the cruise mode. X-sub seq is the line formed by 0 deg meridian plane (that meridian at 0000 UT 25 October 1973 for earth observers) and the solar equatorial plane; Z-sub seq is parallel to the sun's rotation axis (positive northward) and Y-sub seq is also in the solar equatorial plane, perpendicular to X-sub seq. The columns are day of year, time (in hours), field magnitudes, lat. (th), and azimuth (ph), the seq X, Y, Z coordinates and the root mean square (rms) values of the Cartesian magnetic components. At the top is spacecraft information.

Data set name - 6-SECOND NEAR-VENUS MAGNETIC FIELD AND TRAJECTORY DATA

NSSDC ID 73-085A-04G, 6-SEC NEAR-VENUS FIELD PLOTS

Time period covered - 02/04/74 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set consists of the GSFC X-document, "Mariner 10 Near-Venus Magnetic Field and Trajectory Data with Bibliography." It presents, in a useful form, the magnetic field data for a period of 2 days, including 41 hours before and 7 hours after the closest approach to Venus, which occurred at 1702 UT on February 5, 1974. Six-second averages of the field are presented in plot form. It also provides the associated spacecraft trajectory for this time period and contains a comprehensive up-to-date bibliography on the interaction of the solar wind with Venus and related studies.

Data set name - 1.2-SECOND RESOLUTION PLOTS, VENUS COORDINATES ON MICROFILM

NSSDC ID 73-085A-04H, 1.2 SEC PLOTS, VENUS COORDS, MFLM

Time period covered - 01/20/74 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, on microfilm supplied by the experimenter, contains 1.2-s averaged resolution plots of Venus coordinates: each frame contains 1 h of plots per frame (30 min across the frame, twice). The data consist of field latitude and longitude angles, and standard deviations in quasi-payload coordinates.

Data set name - 1.2-SECOND RESOLUTION PLOTS, MERCURY COODINATES ON MICROFILM

NSSDC ID 73-085A-04I, 1.2 SEC PLOTS, MERC. COORDS, MFLM

Time period covered - 03/25/74 TO 03/30/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, on microfilm supplied by the experimenter, contains 1.2-s averaged resolution plots of Mercury coordinates. Each frame contains 1 h of plots per frame (30 min across the frame, twice). The data consist of field latitude and longitude angles, and standard deviations in quasi-payload coordinates.

Data set name - 6-SECOND RESOLUTION LISTINGS, VENUS COORDINATES ON MICROFILM

NSSDC ID 73-085A-04J, 6 SEC LISTS, VENUS COORDS, MFILM

Time period covered - 01/19/74 TO 02/05/74
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set is contained in the GSFC X-document 695-77-207 titled "Mariner 10 Near-Venus Magnetic Field and Trajectory Data with Bibliography." There are 23 figures showing plots of 6-s average magnitude (F), longitude (4) and latitude of the magnetic field for days 4 and 5 February 1974, with 2 hours of data per figure.

Data set name - 6-SECOND RESOLUTION LISTINGS, MERCURY COORDINATES ON MICROFILM

NSSDC ID 73-085A-04K, 6 SEC LISTS, MERC. COORDS, MFILM

Time period covered - 03/25/74 TO 03/30/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a listing on microfilm of 6-s averages in the Mercury orbital (MO) coordinate system. Here X is in the equatorial plane in the direction from the center of Mercury to the Sun, Z is perpendicular to the Mercurian orbital plane (positive northward) and Y is in the equatorial plane also perpendicular to X. The columns give the day of year and time to hours, field magnitudes, lat. (th), and azimuth (ph) coordinates, the MO coordinates X, Y, Z, and the root mean square values (rms) of the Cartesian magnetic component. At the top is spacecraft information.

Data set name - 1.2-SECOND RESOLUTION PLOTS, GSE COORDINATES ON MICROFILM

NSSDC ID 73-085A-04L, 1.2 SEC PLOTS, GSE COORDS, MFILM

Time period covered - 11/03/73 TO 11/06/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of plots on microfilm of the field data in 1.2-s averages. They are plotted in the solar equatorial coordinate system (SEQ), and the spacecraft position was determined relative to that sun-fixed reference frame where X-sub seq lies along the intersection of the 0-deg seq meridian plane and the solar equatorial plane, with the 0 deg meridian defined as that meridian at the center of the solar disk for earth observers at 0000 UT 25 October 1973; Z-sub seq is parallel to the sun's rotation axis (positive northward); and Y-sub seq also lies in the solar equatorial plane. The plots contain the following information: top plot--ordinate is F, the field magnitude (in gammas), abscissa is date and time to the minute, GE coordinates; Z's on the line means folded scale in nT's, Y means two folds, and X means three folds, etc. Middle plot: ordinate Z theta which is the field vector latitude angle (in deg), the dashed line is the 0-deg line and numbers on the solid line are times (in min); the lower set of

numbers is the GE X, Y, Z, r positions in earth radii. Bottom plot: ordinate is phi, the field azimuth angle (in deg); on the upper line, the A's indicate that the instrument is higher than the ground state range (0-16 nt); dashed line is the 0-deg line, and the numbers at the bottom are the seq AZ and lat positions of the spacecraft. The accompanying listing gives the spacecraft position data, date by day of year and time, field data in nT, SEQ coordinates, and root mean square (rms) values of the Cartesian magnetic components.

Data set name - 6-SECOND RESOLUTION LISTINGS, GSE COORDINATES ON MICROFILM

NSSDC ID 73-085A-04M, 6 SEC LISTS, GSE COORDS, MFILM

Time period covered - 11/03/73 TO 11/06/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set on microfilm is a listing with information similar to the 1.2-s listing but is in 6-s averages instead. The listing contains the following information: spacecraft position data in GSE coordinates in the encounter mode: the columns are day of year, time in hours, field magnitude (F), latitude (theta), and azimuth (ph) X, Y, and Z coordinates in the GSE system, and the root mean square (rms) values of the Cartesian magnetic components.

Data set name - MARINER, VENUS, MERCURY PLASMA DETAIL TAPE

NSSDC ID 73-085A-04N, MVM PLASMA DETAIL TAPE

Time period covered - 03/28/74 TO 03/16/75
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These plasma detail data are contained on magnetic tape written at 6250-bpi, 9-track, binary. The data were created on an IBM 360 computer with a physical record size of 31,200 bytes. There are 100 logical records per physical record. Each record contains time in month, day, year, hour, minute, second and millisecond of day; decimal day; angle for each energy step; channeltron count; command and status words; temperature, density, alpha, and gamma halo; magnetic vectors; and magnetic data availability, time validity, and flags.

Data set name - 1.2,6, AND 42-SECOND MAGNETIC FIELD AND TRAJECTORY DATA FOR MERCURY 1+3 ENCOUNTERS

NSSDC ID 73-085A-04O, MAG FLD+TRAJ DATA PLOTS+LISTINGS

Time period covered - 03/29/74 TO 03/16/75
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of the NASA TM document, "Summary of Mariner 10 Magnetic Field and Trajectory Data for Mercury 1 and 3 Encounters" by R. P. Lepping, N. F. Ness, and K. W. Behannon. The document contains a summary compilation of the Mariner 10 magnetic field and associated trajectory data at Mercury 1 (March 29, 1974) and Mercury 3 (March 16, 1975) encounters. The field data are presented in useful plots and numerical listings of 1.2-, 6-, and 42-s averages along with summary figures and tables which have resulted from the studies of the GSFC Mariner 10 magnetometer team. A comprehensive bibliography is also included.

Data set name - MERGED HOURLY AVERAGED FIELD-STANDARD DEEP SPACE IMF/SOLAR WIND DATA ON TAPE

NSSDC ID 73-085A-04P, HRLY-AVG FLD-STND IMF/SOLAR WIND

Time period covered - 11/03/73 TO 09/18/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, on 9-track tape, contains 1-h averages of the interplanetary magnetic field. The data were derived from data set 73-085A-04C. The data were corrected to solar equatorial X, Y, and Z components; and the Carrington longitude, Carrington rotation number, and earth-sun-spacecraft angle were added by NSSDC, to put the data into the standard format of the deepspace mission solar wind data series produced by NSSDC. The eight words of the standard format reserved for plasma data are set to zero in this data set. The data set consists of one file of ASCII-character documentation and one file of IBM 360 binary data. The data points are referred to spacecraft event time. The parameters included are time, spacecraft heliocentric distance, Carrington rotation number, Carrington longitude, heliographic latitude, earth-sun-spacecraft angle, and magnetic field vector in the solar equatorial system, both in rectangular coordinates and in spherical coordinates. The rms deviations of the rectangular components and magnitude are also given.

Data set name - ONE-HOUR AVERAGED PLOTS

NSSDC ID 73-085A-04Q, 1 HOUR AVERAGED PLOTS

Time period covered - 11/03/73 TO 09/18/74
(As verified by NSSDC)

Quantity of data - 5 COLOR SLIDES

This data set consists of color plots of 1-h averages of interplanetary magnetic field (IMF) parameters vs the Carrington rotation number and the Carrington longitude of the subspacecraft point. The plots are from the data set of -04P. The magnitude of each IMF parameter is color coded as indicated above the plot. Each number shows the upper limit of the parameter in that color range; e.g., IMF energy densities from 1.91E-10 to 2.6E-10 are plotted in green. Lowest energies are in purple and the highest are in red. For the component data, the same scheme applies except that the passband limits are lower limits in the case of negative values, and zero is at the center. Each 1-h average data point is plotted 1 pixel wide and 3 pixels high. A blank line 3 pixels high is left between data lines. The parameters include BXSE NT which equals the component of IMF along the X-axis in the solar equatorial system, positive toward the sun, in nanoteslas. Similarly, BYSE NT is along the Y-axis, BZSE NT is along the Z-axis, BTOT NT is the IMF vector, and MAG. ED is the IMF energy density in ergs/cc. Blank areas are data gaps. The Carrington longitude decreases as a function of time, thus the start of each line is at the right. Therefore, the rotation and year are correct at the right end. The rotation number given is the one seen by an earth-based observer at the start of the 1-h average data accumulation interval.

Data set name - 1.2,6, & 42 SECOND MERCURY ENCOUNTER DATA ON MAGNETIC TAPE (*)

NSSDC ID 73-085A-04R, 1.2,6,&42 SEC MERCURY ENCTR TAPE

Time period covered - 03/26/74 TO 03/31/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of 1.2-s, 6-s and 42-s average magnetic field vectors, in Mercury-centered Cartesian coordinates on 9-track, 1600-bpi, binary, standard labeled magnetic tape recorded on an IBM 360 computer. The tape contains a header record of 10,152 bytes followed by data records of 11,652 bytes. The header record contains a satellite ID, day of year and milliseconds of the day of the first data record, coordinate system description and instrument information. The data records contain averages of the ambient field. Each record contains one 42-s average, seven 6-s averages, and thirty-five 1.2-s averages. Vector rms error estimates are provided. Each data record also contains the year and day of the data, milliseconds of the day of the current 42-s block, housekeeping and status words, and data quality flags. Spacecraft ephemeris information is also included after each 42-s set of measurements.

MARINER 10, SIMPSON
ENERGETIC PARTICLES

Data set name - PULSE HEIGHT DATA ON TAPE

NSSDC ID 73-085A-07A, PULSE HEIGHT DATA ON TAPE

Time period covered - 11/03/73 TO 03/21/75
(As verified by NSSDC)

Quantity of data - 45 REELS OF TAPE

These experimenter-supplied, pulse-height data are on 7-track, 800-bpi, binary magnetic tape created on an XDS 930 computer. Non-zero pulse-height events were extracted from raw experimental data records beginning at a specified time and collected over the following 15 min. At the end of a 15-min period, two or more physical records containing a variable number of events (depending primarily upon solar activity) are written onto tape. The first of these records is a header of 120 24-bit words containing time (in day and fraction of day) and supporting information necessary for the analysis of the data. This information includes a data quality indicator, command status, summarization of coverage and quality of data, selected counting rates, satellite number, and the number of events. The data records contain non-zero pulse heights from the 15-min period described in the header record. The physical records are of variable length with a minimum of 150 words and a maximum of 1020 words. Two 24-bit words represent either a

main telescope or low-energy telescope event containing the range identification for a particle, data quality indicator, and the telemetered pulse-height analysis channel reported for the event from detectors 1, 2, and 5.

Data set name - RATE DATA ON TAPE

NSSDC ID 73-085A-07B, RATE DATA ON TAPE

Time period covered - 11/03/73 TO 09/23/74
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These experimenter-supplied, charged particle telescope rate data are on 7-track, 800-bpi, binary magnetic tape created on an XDS 930 computer. An observation (a logical record of 44 24-bit words) is defined to be a collection of all rates computed over a 1-min interval of real-time together with some identifying information, data quality indicators and supporting spacecraft or instrument parameters. The physical records contain 12 logical records. The identifying information includes year, spacecraft identification, and time (in seconds of year) of the beginning and end of the count accumulation used to compute the rate for the observation. The remaining data include seconds of coverage for three rate types; computed rate in counts per second of seven frame rates; charged-particle telescope, spacecraft bay seven, and battery temperature; and spacecraft buss voltage and current during the 1-min interval.

********** PIONEER 5 **********

PIONEER 5, GREENSTADT
SEARCH-COIL MAGNETOMETER

Data set name - TABLES AND PLOTS OF MAGNETIC FIELD AMPLITUDE ON MICROFILM

NSSDC ID 60-001A-02A, TABLES AND GRAPHS OF T, MAG AMP

Time period covered - 03/11/60 TO 05/06/60
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These reduced data are available in the TRW publication, "A Compendium and Critique of Pioneer V Magnetometer Data," by Eugene W. Greenstadt, Space Technology Laboratories, 9890-6001-RU000, January 12, 1965. The data are also available at NSSDC on one reel of 16-mm microfilm. The data are compiled according to individual digital telemetry transmission periods, and these time periods are ordered chronologically. Within each telemetry transmission period all the digital outputs are listed in decreasing order, and the number of times that number was transmitted is indicated. The following information is contained on tables in the publication (and on microfilm): date, time (beginning and end), transmission sequence number, bit rate, digital reading, number of data points at each digital reading and the total for each transmission, and magnitude of the field (in nT) at the center of the digital reading. The tables have a 10% coverage for the period indicated. Also included with these data are some statistical plots. For each day from March 12, 1960, to April 30, 1960, the measured field in nT vs the percent of the measured points that lie below various values of the measured field is plotted.

Data set name - RAW EXPERIMENT DIGITAL OUTPUTS (COMPUTER LISTINGS) ON MICROFILM

NSSDC ID 60-001A-02B, COMPUTER LISTINGS OF TELEMETRY

Time period covered - 03/11/60 TO 07/11/60
(As verified by NSSDC)

Quantity of data - 5 REELS OF MICROFILM

These raw data consist of computer listings on five reels of 16-mm microfilm of the digital outputs from each of the experiments on the satellite. Time, date, and ground station are indicated. The last useful data from the magnetometer were received on May 6, 1960. Ephemeris data past this time are found on the microfilm.

Data set name - RAW ANALOG DATA FOR SANBORN OSCILLOGRAMS ON MICROFILM

NSSDC ID 60-001A-02C, SANBORN OSCILLOGRAMS AND CALIBRAT

Time period covered - 03/11/60 TO 07/05/60
(As verified by NSSDC)

Quantity of data - 12 REELS OF MICROFILM

These raw data consist of the Sanborn oscillograms recorded for the entire telemetry life of Pioneer 5. They were made from the analog magnetic tapes that were recorded at the Manchester, Cape Canveral, Singapore, and Hawaii ground stations. The oscillograms are plots of frequency vs time for each analog telemetry channel. The data are time ordered and are available on 12 reels of 35-mm microfilm. The last useful data from the magnetometer were received on May 6, 1960. Ephemeris data past this time are found on the microfilm.

PIONEER 5, SIMPSON
PROPORTIONAL COUNTER TELESCOPE

Data set name - SINGLE AND TRIPLE COINCIDENCE COUNT RATES VS TIME ON MICROFILM

NSSDC ID 60-001A-01A, PLOTS TRIP.+SINGLE DATA VS TIME

Time period covered - 03/11/60 TO 05/10/60
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

The data consist of 10 graphic plots of triple coincidence counting rates and single counting rates plotted vs time. The data cover the period March 11, 1960, to May 10, 1960. Also included are tables of triple coincidence counting rates (April 2, 1960, to May 4, 1960). The data are time ordered on one reel of 35-mm microfilm.

Data set name - TABLES OF SINGLE AND TRIPLE COINCIDENCE COUNTS (TIME ORDERED) ON MICROFILM

NSSDC ID 60-001A-01B, DIGITAL TRIP.+SINGLE DATA(TIME)

Time period covered - 03/11/60 TO 05/16/60
(As verified by NSSDC)

Quantity of data - 5 REELS OF MICROFILM

This data set consists of tables of raw single and triple coincidence counts from the proportional counter telescope. The counts are in a time-ordered format covering the time interval from March 11, 1960, to May 16, 1960. The data are on five reels of 35-mm microfilm. Also included in the computer-produced tables are micrometeorite measurements, Geiger counter and ion chamber counts, and search coil magnetometer data.

PIONEER 5, WINCKLER
ION CHAMBER AND GM TUBE

Data set name - TABULATIONS OF COUNT AND PULSE RATES VS TIME ON MICROFILM

NSSDC ID 60-001A-03A, TABULATIONS RATES VS T MFLM

Time period covered - 03/11/60 TO 04/29/60
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of one reel of 35-mm microfilm that was generated from tabulations submitted by the experimenter. GM tube data include the value of the GM tube register, the change in this register between two successive data transmissions, a calculated counting rate, and a counting rate corrected for the dead time of the register. Data from the ion chamber include the value of the ion chamber register, the change in this register between two successive data transmissions, a calculated pulse rate, and normalized and dead-time corrected pulse rates. The date, the on and off times in UT of the transmission, and the receiving station are given for each data value. These data, which are time ordered and contain no ephemeris information, cover approximately 20% of the period from March 11, 1960, to April 29, 1960.

Data set name - COMPUTER LISTING OF COUNT AND PULSE RATES VS TIME ON MICROFILM

NSSDC ID 60-001A-03D, COMPUT LSTNG RATES VS T MFLM

Time period covered - 03/11/60 TO 05/17/60
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of two reels of 35-mm microfilm that were generated from computer printout submitted by the experimenter. Values in the GM and ion chamber registers are given. The ephemeris information presented includes the spacecraft radial distance from the earth and from the sun, perpendicular distance to the ecliptic plane, and right ascension and declination. The date, the on and off times (UT) of the transmission, and the receiving station are given for each data value. Inventories of the data received from each station immediately precede the data listing from each station. These data, which are time ordered for each station, cover approximately 20% of the period from March 11, 1960, to May 17, 1960. Data for that portion of the period after April 27, 1960, are noisy, and have not been included in the microfilm.

********** PIONEER 6 **********

Data set name - PLOT OF PIONEER 6 AND 7 TRAJECTORY IN FIXED SUN-EARTH LINE COORDINATES

NSSDC ID 65-105A-00D, EPHEMERIS, ORBIT PLOT

Time period covered - 12/16/65 TO 03/11/70
(As verified by NSSDC)

Quantity of data - 1 PAGE OF UNBOUND HARDCOPY

This data set consists of one 8.5 by 11 hardcopy plot of the trajectories of Pioneers 6 and 7 in sun-earth line fixed coordinates. The data cover the periods from launch until day 70, 1970, for Pioneer 6 and from launch until day 190, 1971, for Pioneer 7. On the plots, tick marks are shown 10 days apart, and field lines are given for a 400-km/s solar wind velocity. This plot is useful for quick look information only. See data set 65-105A-00E for more accurate trajectory information.

Data set name - MULTI-COORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 65-105A-00E, EPHEMERIS TAPES

Time period covered - 12/16/65 TO 05/16/72
(As verified by NSSDC)

Quantity of data - 9 REELS OF TAPE

Complete trajectory information was supplied by the Pioneer Project Office at Ames Research Center. The data are contained on nine 7-track, 800-bpi, IBM 7094, binary magnetic tapes. Each tape has one file. A Fortran IV program which reads the tapes and prints out the data is available. Each tape was generated by JPL. The tapes consist of trajectory information, described below, predicted from orbit elements, which were themselves determined from observed trajectory data. Thus, the tapes overlap in the time period covered. For the most accurate trajectory information, the tape whose start time is closest to the date required should be used. The Pioneer 6 trajectory tapes cover the following time periods: 12/18/65 to 07/06/66, 12/16/65 to 10/24/66, 10/14/66 to 11/18/67, 03/09/67 to 04/01/68, 03/15/68 to 03/15/69, 03/15/69 to 03/15/70, 10/01/69 to 10/01/71, 01/15/70 to 01/16/72, 05/15/70 to 05/16/72. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth when the interval may be shorter) on each of the trajectory tapes: (1) date, (2) time, (3) distance from earth to probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascensions and declinations of probe, sun, and moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth as observed from the probe, (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun-to-probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun-to-earth vector, z axis is toward the ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth-to-probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the vector along the earth's spin axis and the earth-to-probe vector and the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counter-clockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID 65-105A-00F, COMPRESSED EPHEMERIS TAPES

Time period covered - 12/16/65 TO 05/16/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set which contains complete trajectory information was generated at NSSDC by taking the most accurate information from each ephemeris tape provided by JPL (data set 65-105A-00E) and eliminating overlap. The data set consists of one 7-track, IBM 7094, 800-bpi, binary magnetic tape. Each logical record contains 89 words, and each physical record contains 20 logical records. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth, when the interval may be shorter): (1) date, (2) time, (3) distance from the earth to the probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, and moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe-centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun-to-earth vector, z axis is toward ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinate (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth-to-probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COROTATION DELAY TIME PLOTS AND LISTINGS ON MICROFILM

NSSDC ID 65-105A-00G, COROTATION DELAY TIME LISTINGS

Time period covered - 12/01/65 TO 05/01/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was derived from part of data set 65-105A-00F by printing out time, the earth-sun-Pioneer angle, the sun-Pioneer distance, and the earth-sun distance. From this information, the corotation delay times for solar wind velocities of 200, 400, and 600 km/s were derived and printed out for each time. This data set includes listings of the above as well as plots of the earth-sun-Pioneer angle, the sun-Pioneer range, and the corotation delay times (for a solar wind velocity of 400 km/s) for each of the Pioneers. At least one point is given per week, with more frequent coverage for most of the time.

PIONEER 6, ANDERSON
CELESTIAL MECHANICS

Data set name - DOPPLER RADIO TRACKING DATA ON TAPE

NSSDC ID 65-105A-07A, CELESTIAL MECHANICS MAG. TAPES

Time period covered - 12/18/65 TO 09/24/67
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set, supplied by the experimenter, consists of two 7-track, 556-bpi, binary magnetic tapes that were produced on an IBM 7094 computer system and used to record the Doppler radio tracking data from Pioneer 6. The data are range, range rate, elevation, azimuth, declination, right ascension, one-, two-, and three-way Doppler in cycles per second, time resolver, range units, and planetary range units. The frequency of the data points appearing on the tape varies from one point per min to one point every 10 min.

PIONEER 6, BRIDGE
SOLAR WIND PLASMA FARADAY CUP

Data set name - PLOTS OF HOURLY AVERAGED SOLAR WIND PLASMA PARAMETERS ON MICROFILM

NSSDC ID 65-105A-02A, PLOTS OF VEL, DEN, TEMP, VS TIME

Time period covered - 12/18/65 TO 04/03/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These first-generation analyzed data consist of time-ordered plots of 1-h averages of solar wind positive ion bulk speed (km/s), density (no./cu cm), and temperature (in 10,000 deg K). Individual plots continue for one solar rotation (27 days) and are available on one reel of 35-mm microfilm. Data plots from the MIT experiment on Pioneer 7 (data set 66-075A-02A) appear on this same reel of microfilm. The plasma parameters were derived by the experimenter on the assumption of an isotropic Maxwellian distribution function. Data are available from December 18, 1965, to May 1966, with 95% coverage, and from June 1966 to April 3, 1969, with 20% coverage.

Data set name - HOURLY AVERAGED VELOCITY AND DENSITY VALUES IN SGD BULLETINS

NSSDC ID 65-105A-02B, MIT PLASMA PARAM 1 HR AV GEOPHYSB

Time period covered - 03/01/69 TO 02/28/70
(As verified by NSSDC)

Quantity of data - 11 BOOKS OR BOUND VOLUMES

In this data set, solar wind hourly averaged velocity and density are presented as listings against time. These data are in certain issues of the Solar Geophysical Data Bulletins published by ESSA, Boulder, Colorado.

Data set name - 1-HR AVG SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7

NSSDC ID 65-105A-02C, NSSDC PLASMA PUBLICATION-MIT DATA

Time period covered - 12/16/65 TO 05/18/71
(As verified by NSSDC)

Quantity of data - 8 CARDS OF B/W MICROFICHE

The contents of this NSSDC/MIT publication were created at the Center for Space Research, Massachusetts Institute of Technology, Cambridge, Massachusetts. The publication contains a description of the instrument, a description of the data taking and analysis procedures, 27 one-day plots of 1-h averages of plasma parameters (density, temperature, bulk, speed, polar and azimuthal angles of flow with respect to the ecliptic), and data and trajectory information in both tabular and plotted form. The document is on 8-1/2- by 11-in. paper, is 1-1/2-in. thick, and has holes punched in the margins for insertion into a standard three-hole binder. Pioneer 7 data (66-075A-02C) are also included in this document.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS ON BCD 7-TRACK MAGNETIC TAPE

NSSDC ID 65-105A-02D, HOUR AVG PLASMA PARAMETERS ON TP

Time period covered - 12/16/65 TO 05/09/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This magnetic tape contains 1-h averages of nine parameters from the MIT Solar Wind Experiment. The parameters are solar wind bulk speed, density, most probable thermal speed, flux, ratio of thermal speed to bulk speed, two flow angles, velocity component in the ecliptic perpendicular to the radial direction, and velocity component perpendicular to the ecliptic. Each record contains time and the averages, standard deviations, and number of points in the average for each parameter. The tape is a 7-track, 800-bpi, BCD tape created on an IBM 360. There are ten 286-character logical records blocked per physical record.

PIONEER 6, ESHLEMAN
TWO-FREQUENCY BEACON RECEIVER

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MAGNETIC TAPE

NSSDC ID 65-105A-04A, TOTAL ELECT CONTENT,HRLY VAL (DD)

Time period covered - 12/16/65 TO 07/11/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of digitized hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity of signals from earth to the spacecraft. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one 556-bpi, 7-track, BCD magnetic tape generated at NSSDC from punched cards supplied by the experimenter. The tape also contains identical data for other time periods from Pioneers 7 (66-075A-04A), 8 (67-123A-03A), and 9 (68-100A-03A), and Mariner 5 (67-060A-02A).

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MICROFILM

NSSDC ID 65-105A-04B, TOTAL ELECT CONTENT,HRLY VAL(MO)

Time period covered - 12/16/65 TO 07/11/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of digitized and plotted hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity of signals from earth to the spacecraft. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one reel of 35-mm microfilm generated at NSSDC from data supplied by the experimenter. This reel of microfilm also contains identical data for other time periods from Pioneer 7 (66-075A-04B), 8 (67-123A-03B), 9 (68-100A-03B), and Mariner 5 (67-060A-02B), and solar wind electron density plots from Pioneers 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03D).

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU ON TAPE

NSSDC ID 65-105A-04D, CORRECTED ELECT DENSITY,TAPE

Time period covered - 01/09/66 TO 05/25/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of hourly values of normalized electron number density in the solar wind. To obtain these data, the ionospheric total content was removed from the observed total content values, and the total content path length was used to convert total content to density. The resulting values were then normalized to 1 AU assuming density to be proportional to the inverse square of the satellite-solar distance. Values resulting from interpolation are flagged. No interpolated values were recorded when data gaps exceeded 4 days. This data set is on one 800-bpi, 7-track, odd-parity, binary magnetic tape generated on a Sigma 5 computer. Auxiliary data on the tape

include UT and Carrington rotation number. Data are available for about 12 h per day when the spacecraft was in view from the Stanford transmitter. Identical data for other time periods from Pioneers 7 (66-075A-04D), 8 (67-123A-03C), and 9 (68-100A-03C), and Mariner 5 (67-060A-02C) also appear on this tape.

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1AU (MFILM)

NSSDC ID 65-105A-04E, CORRECTED ELECT DENS. PLOTS, 35MM

Time period covered - 01/10/66 TO 06/01/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of plots of electron density vs time in the solar wind. To obtain these data, the ionospheric total content for the same times at a nearby location were removed from the observed total content values. Then the observed total content path length was used to convert total content to density. The resulting values were normalized to 1 AU, assuming density to be proportional to the inverse square of the satellite-solar distance. This data set is on one reel of 35-mm microfilm. This reel of microfilm also contains identical data for other time periods from Pioneers 7 (66-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03D), and hourly values of total electron content from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), and 9 (68-100A-03B), and Mariner 5 (67-060A-02B). This data set is also available on tape (65-105A-04D).

PIONEER 6, LEVY
SUPERIOR CONJUNCTION FARADAY ROTATION

Data set name - SUPERIOR CONJUNCTION FARADAY ROTATION DATA ON TAPE

NSSDC ID 65-105A-08A, SUPERIOR CONJ.FARADAY ROTATION

Time period covered - 10/12/66 TO 11/24/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set contains reduced data in the form of card images (84-character records) on one 7-track, BCD, 556-bpi, single file magnetic tape. The data are listings of the polarization angle (relative to the ecliptic plane) averaged in 200-s intervals, the standard deviation, and the average time and date (in decimal days) of the observations. The data are complete. Data from Pioneer 7 (data set 66-075A-08A) are also included.

PIONEER 6, MCCRACKEN
COSMIC-RAY ANISOTROPY

Data set name - COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 65-105A-05A, HOURLY COUNT RATES, MFILM LISTING

Time period covered - 12/16/65 TO 02/06/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed copy, generated at NSSDC, of a hardcopy data listing supplied by the experimenter. Each frame consists of data for 1 day. Data presented include hourly averaged count rates for each of four angular sectors and each of three energy windows, for the omnidirectional integral-energy mode, and for the estimated galactic component of this mode. Hourly averaged, omnidirectional (i.e., summed over sector counts), energy-window count rates are presented, as are measures of the amount of finer time scale data contributing to each hourly average. Daily averages of all the count rates are given, and 3-, 6-, and 12-h averages are given for the lowest energy window omnidirectional mode, for the integral-energy omnidirectional mode, and for the estimated galactic component of this mode. Daily measures of temporal percent coverages are also given with considerable variation (from 0 to 100) in the percentages. Days for which no data exist are not found on the microfilm. The data are contained on one reel of 35-mm microfilm that also contains data set 65-105A-05B.

Data set name - COUNT RATE PLOTS ON MICROFILM

NSSDC ID 65-105A-05B, HOURLY COUNT RATES, MFILM PLOTS

Time period covered - 12/16/65 TO 01/25/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed copy, generated at NSSDC, of hardcopy count rate plots supplied by the experimenter. Each frame consists of data for 7 days. Hourly averaged count rates for the omnidirectional integral-energy and energy-window modes are presented, as are relative count rates from the Deep River Neutron Monitor. The decreasing percent coverage with time is readily apparent. This data set is contained on one reel of 35-mm microfilm that also contains data set 65-105A-05A.

PIONEER 6, NESS
UNIAXIAL FLUXGATE MAGNETOMETER

Data set name - 30-SEC AVERAGED VECTOR MAGNETIC FIELD DATA ON TAPE

NSSDC ID 65-105A-01A, 30 SEC VR MAGNETIC FIELD AVG,TAPE

Time period covered - 01/26/66 TO 07/26/66
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set consists of 7-track, 556-bpi, IBM 7094 binary tapes supplied by the experimenter. Each tape contains one file, and each physical record contains data for 1 h. Given are 30-s averages of the vector magnetic field components in solar ecliptic coordinates. The number of points in each average (up to 30) and the standard deviation are given. Times of the averages and other supporting information are also given. There is no spacecraft ephemeris information.

Data set name - HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA ON MICROFILM

NSSDC ID 65-105A-01B, HOURLY AVGD VR MAG FIELD, MFILM

Time period covered - 12/17/65 TO 09/05/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed (one 35-mm reel) version of Goddard X- document "Magnetic Field Measurements by Pioneer 6, 1-Hourly Averages" (X-690-71-449) by N. F. Ness and F. W. Ottens. Data presented in the document include hourly averaged magnetic field plots (magnitude, latitude, longitude) in spacecraft-centered solar ecliptic coordinates. Time coverage is nearly complete from launch until May 22, 1966, after which the coverage, as limited by spacecraft telemetry, is very spotty. Each of 21 frames contains plots for one solar rotation during the time period covered.

Data set name - TIME SEQUENCED INTERSPERSED PIONEER 6 + 7 HR AVERAGED MAGNETIC FIELD DATA ON TAPE

NSSDC ID 65-105A-01C, HR AVG PION-6 + 7 VECTORS ON TAPE

Time period covered - 12/15/65 TO 09/15/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of a magnetic tape generated by NSSDC personnel by extracting hourly averaged Pioneers 6 and 7 magnetic field data from a composite interplanetary magnetic field tape of the experimenter. The tape is 9-track, 1600 bpi, IBM 360 binary and has 16 data words per logical record and 50 logical records per physical record. The data in a logical record consist of time, hourly averaged field magnitude and field direction angles in solar ecliptic coordinates, standard deviations in field magnitude and in Cartesian components, number of 30-s averages in hourly averages, and a spacecraft identifier. There are 6375 and 4962 Pioneer 6 and 7 data hours, respectively, interspersed such that the entire tape is time sequenced.

PIONEER 6, SIMPSON
COSMIC-RAY TELESCOPE

Data set name - REDUCED COUNT RATE AND PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID 65-105A-03A, COUNT RATE + PULSE HEIGHT DATA

Time period covered - 12/16/65 TO 12/30/70
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

This data set, supplied by the experimenter, consists of proton and alpha particle count and pulse-height analyzer accumulator readings in a time-ordered format on 7-track, binary, IBM-compatible magnetic tapes written at 800 bpi. The time resolution for the count accumulator data ranged from about one measurement per 0.4 to 28 s depending on the spacecraft telemetry rate. Each physical record consists of 500 logical records of 12 bytes each. The logical records are of two types: header records and data records. A given header record is followed by from 1 to 64 data records of the same spacecraft subcommutated sequence. Each tape terminates with an EOD flag in the last good data record. Each header record includes various spacecraft temperatures, spin rate, telemetry bit rate, and other housekeeping parameters. Each data record includes time, pulse height analyzer output (D1 and D3 elements of the cosmic-ray telescope), and data quality information. The data are uncorrected but have been edited to the extent that doubtful information has been flagged and unusable data deleted.

Data set name - COUNT RATE PLOTS AND TRAJECTORY PLOT ON MICROFILM

NSSDC ID 65-105A-03D, COUNT RATE PLOTS,27 DAY EACH

Time period covered - 12/16/65 TO 12/26/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

The data set is contained on 16-mm microfilm and includes (1) a plot of the Pioneer 6 trajectory in heliocentric solar ecliptic coordinates covering the time interval from day 350 of 1965 (December 16, 1965) to day 70 of 1970 (March 11, 1970) and (2) count rate plots (counts/s vs day number) produced on a Calcomp plotter for 27-day intervals for the telescope coincidence combinations that correspond to the following energy intervals for protons: 0.6 to 13.9 MeV, 13.9 to 73.2 MeV, 73.2 to 175 MeV, and e>175 MeV. The count rate data, which are a composite of real-time data and duty-cycle-storage data, cover the time interval from December 16, 1965, to December 26, 1968.

PIONEER 6, WOLFE
ELECTROSTATIC ANALYZER

Data set name - PLOTS OF ANALYZED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 65-105A-06A, PLOTS OF PLASMA PARAMETERS

Time period covered - 12/16/65 TO 03/18/74
(As verified by NSSDC)

Quantity of data - 22 REELS OF MICROFILM

These analyzed data were supplied by the experimenter and consist of time-ordered plots of the following solar wind parameters: (1) proton number density (protons/cu cm), (2) azimuth (solar ecliptic longitude) of the peak particle flux for ions (deg), (3) bulk velocity (km/s), (4) polar angle (solar ecliptic latitude) of the peak particle flux (deg), (5) proton temperature and helium temperature (deg), (6) helium/hydrogen ratio (number of helium ions/cu cm/number of protons/cu cm), (7) electron temperature (deg K), and (8) two indicators of the anisotropy in the solar plasma ion temperature distribution. The experimenter gives the following indicators of accuracy: (1) bulk velocity, good to 10%, (2) direction, good to a few degrees, and (3) temperature and density, could be off by as much as 200%. The plasma parameters were derived by the experimenter based on the assumption of an isotropic Maxwellian distribution function (in the frame moving with the bulk solar wind velocity). Data are available from December 16, 1965, to February 1966 with a 95% coverage; from March 1966 to May 1966 with a 50% coverage; from June 1966 to October 27, 1968, with a 10% coverage; and after October 1968 with very limited coverage.

Data set name - PUBLISHED PRELIMINARY SOLAR WIND PARAMETERS

NSSDC ID 65-105A-06B, SOLAR GEOPHYS DATA PRLSD SOLAR WD

Time period covered - 12/16/65 TO 05/05/75
(As verified by NSSDC)

Quantity of data - 71 BOOKS OR BOUND VOLUMES

This data set consists of preliminary solar wind parameters presented in the monthly publication "Solar-Geophysical Data" issued by the NOAA Environmental Research Laboratories. These parameters are determined by measurements on the Pioneer 6 and 7 space probes. The information given consists of date, time, spacecraft, pass number, bulk velocity, and corotation delay time. The bulk velocity is accurate to 10%. The corotation delay time is the number of days between the observation at the spacecraft and the subsequent observation at the earth of the corotating interplanetary magnetic flux tube (assuming that the solar wind speed reported remains constant). Typically, there is one velocity value given for each satellite per day. On about 30% of the days, no data are given. There is a 1-month lag between the time the data are acquired and the time the data are published.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS

NSSDC ID 65-105A-06C, HR AVG PLASMA PARAM ON MAG TAPE

Time period covered - 12/18/65 TO 03/04/66
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These analyzed data were supplied by the experimenter and consist of time-ordered hourly averages of the following solar wind parameters: the alpha/proton number density ratio, the proton number density, the alpha particle temperature (deg K), the proton temperature (deg K), the bulk velocity (km/s), the azimuthal angle (solar ecliptic longitude) of the peak particle flux (deg), and the polar angle (solar ecliptic latitude) of the peak particle flux (deg). The above plasma parameters are good to 10%. The data were derived by the experimenter based on the assumption of an isotropic Maxwellian distribution function (in the frame moving with the bulk solar wind velocity). The data are contained on two 9-track, IBM 360, binary magnetic tapes written at a density of 800 bpi. They were written with variable length unblocked records. The data consist of all the high bit rate data and have a 90% coverage over the period indicated. A microfilmed computer printout of these tapes is available at NSSDC as 65-105A-06D.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 65-105A-06D, HOURLY AVERGD PLASMA PARAM - MFLM

Time period covered - 12/18/65 TO 03/04/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was microfilmed by NSSDC from a computer printout of data set 65-105A-06C.

********** PIONEER 7 **********

Data set name - PLOT OF PIONEER 6 AND 7 TRAJECTORY IN FIXED SUN-EARTH LINE COORDINATES

NSSDC ID 66-075A-00D, EPHEMERIS, ORBIT PLOTS

Time period covered - 08/17/66 TO 07/09/71
(As verified by NSSDC)

Quantity of data - 1 PAGE OF UNBOUND HARDCOPY

This data set consists of one 8.5 by 11 hardcopy plot of the trajectories of Pioneers 6 and 7 in sun-earth line fixed coordinates. The data cover the periods from launch until day 70, 1970, for Pioneer 6 and from launch until day 190, 1971, for Pioneer 7. On the plots, tick marks are shown 10 days apart, and field lines are given for a 400-km/s solar wind velocity. This plot is useful for quick look information only. See data set 66-075A-00E for more accurate trajectory information.

Data set name - MULTI-COORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 66-075A-00E, EPHEMERIS TAPES

Time period covered - 08/17/66 TO 01/02/72
(As verified by NSSDC)

Quantity of data - 9 REELS OF TAPE

Complete trajectory information was supplied by the Pioneer Project Office at Ames Research Center. The data are contained on nine 7-track, 800-bpi, IBM 7094, binary magnetic tapes. Each tape has one file. A Fortran IV program which reads the tapes and prints out the data is available. Each tape was generated by JPL. The tapes consist of trajectory

information which is described below, predicted from orbit elements which were themselves determined from observed trajectory data. Thus, the tapes overlap in the time period covered. For the most accurate trajectory information, the tape whose start time is closest to the date required should be used. The Pioneer 7 trajectory tapes cover the following time periods -- 08/17/66 to 03/05/67, 08/19/66 to 03/07/67, 03/01/67 to 02/01/68, 01/25/68 to 05/01/68, 04/18/68 to 10/18/68, 07/15/68 to 07/15/69, 07/15/69 to 07/15/71, 11/15/69 to 12/31/69, 01/01/70 to 01/02/72. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth when the interval may be shorter) on each of the trajectory tapes: (1) date, (2) time, (3) distance from the earth to probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun to earth vector, z axis is toward ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth to probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the earth to probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun to probe vector), (26) celestial longitude of probe (angular distance measured counter-clockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID 66-075A-00F, COMPRESSED EPHEMERIS TAPES

Time period covered - 08/17/66 TO 01/02/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set which contains complete trajectory information was generated at NSSDC by taking the most accurate information from each ephemeris tape provided by JPL (data set 66-075A-00E) and eliminating overlap. The data set consists of one 7-track, IBM 7094, 800-bpi, binary magnetic tape. Each logical record contains 89 words, and each physical record contains 20 logical records. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth, when the interval may be shorter): (1) date, (2) time, (3) distance from the earth to the probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe-centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun-to-probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun-to-earth vector, z axis is toward ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinate (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth-to-probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COROTATION DELAY TIME PLOTS AND LISTINGS ON MICROFILM

NSSDC ID 66-075A-00G, COROTATION DELAY TIME LISTINGS

Time period covered - 08/01/66 TO 01/00/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was derived from part of data set 66-075A-00F by printing out time, the earth-sun-Pioneer angle, the sun-Pioneer distance, and the earth-sun distance. From this information, the corotation delay times for solar wind velocities of 200, 400, and 600 km/s were derived for each time. This data set includes listings of the above as well as plots of the earth-sun-Pioneer angle, the sun-Pioneer range, and the corotation delay times (for a solar wind velocity of 400 km/s) for each of the Pioneers. At least one point is given per week, with more frequent coverage for most of the time.

PIONEER 7, BRIDGE
SOLAR WIND PLASMA FARADAY CUP

Data set name - PLOTS OF HOURLY AVERAGED SOLAR WIND PLASMA PARAMETERS ON MICROFILM

NSSDC ID 66-075A-02A, PLOTS OF VEL, DEN, TEMP, VS TIME

Time period covered - 08/18/66 TO 12/02/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These first generation analyzed data consist of time-ordered plots of 1-h averages of solar wind positive ion bulk speed (km/s), density (no./cu cm), and temperature (in 10,000 deg K). Individual plots continue for one solar rotation (27 days) and are available on one reel of 35-mm microfilm. Data plots from the MIT experiment on Pioneer 6 (data set 65-105A-02A) appear on this same reel of microfilm. The plasma parameters were derived by the experimenter on the assumption of an isotropic Maxwellian distribution function (in the frame of reference moving with the bulk velocity of the solar wind). Data are available from August 18, 1966, to October 1966, with a 94% coverage; from October 1966, to February 1967, with a 50% coverage; and from February 1967, to December 2, 1968, with a 30% coverage.

Data set name - HOURLY AVERAGED VELOCITY AND DENSITY VALUES IN SGD BULLETINS

NSSDC ID 66-075A-02B, MIT PLASMA PARAM / HR AV GEOPHYSB

Time period covered - 06/02/69 TO 10/31/69
(As verified by NSSDC)

Quantity of data - 5 BOOKS OR BOUND VOLUMES

In this data set, solar wind hourly averaged velocity and density are presented as listings against time. These data are in certain issues of the Solar Geophysical Data Bulletins published by ESSA, Boulder, Colorado.

Data set name - 1-HR AVG SOLAR WIND DATA FROM THE EXPERIMENTS ON PIONEER 6 AND PIONEER 7

NSSDC ID 66-075A-02C, NSSDC PLASMA PUB-MIT DATA MFICHE

Time period covered - 08/18/66 TO 12/02/68
(As verified by NSSDC)

Quantity of data - 8 CARDS OF B/W MICROFICHE

The contents of this NSSDC/MIT publication were created at the Center for Space Research, Massachusetts Institute of Technology, Cambridge, Massachusetts. The publication contains a description of the instrument, a description of the data taking and analysis procedures, 27 one-day plots of 1-h averages of plasma parameters (density, temperature, bulk, speed, polar and azimuthal angles of flow with respect to the ecliptic), and data and trajectory information in both tabular and plotted form. The document is on 8-1/2- by 11-in. paper, is 1-1/2-in. thick, and has holes punched in the margins for

insertion into a standard three-hole binder. Pioneer 6 data (65-105A-02C) are also included in this document.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS ON BCD 7-TRACK MAGNETIC TAPE

NSSDC ID 66-075A-02D, HOUR AVG PLASMA PARAMETERS ON TP

Time period covered - 08/19/66 TO 11/29/68 (As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This magnetic tape contains 1-h averages of nine parameters from the MIT Solar Wind Experiment. The parameters are solar wind bulk speed, density, most probable thermal speed, flux, ratio of thermal to bulk speed, two flow angles, velocity component in the ecliptic perpendicular to the radial direction and velocity component perpendicular to the ecliptic. Each record contains time and the averages, standard deviations, and number of points in the average for each parameter. The tape is a 7-track, 800-bpi, BCD tape created on an IBM 360. There are ten 286-character logical records blocked per physical record.

Data set name - LISTINGS OF MAGNETOTAIL HIGH RESOLUTION FLUXES ON MICROFILM

NSSDC ID 66-075A-02E, MAGNETOTAIL HIGH RES FLUXES-LIST

Time period covered - 09/19/66 TO 09/30/66 (As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This microfilm data set was produced at NSSDC from a computer printout supplied by the investigator. It represents Pioneer 7 plasma data during passage through the Earth's magnetotail. It is a listing of high resolution flux measurements.

PIONEER 7, ESHLEMAN
TWO-FREQUENCY BEACON RECEIVER

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON TAPE

NSSDC ID 66-075A-04A, TOTAL ELECT CONTENT, HRLY VAL(DD)

Time period covered - 08/18/66 TO 11/29/67 (As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of digitized hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one 556-bpi, 7-track, BCD magnetic tape generated at NSSDC from punched cards supplied by the experimenter. The tape also contains identical data for other time periods from Pioneers 6 (65-105A-04A), 8 (67-123A-03A), and 9 (68-100A-03A), and Mariner 5 (67-060A-02A).

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MICROFILM

NSSDC ID 66-075A-04B, TOTAL ELECT CONTENT,HRLY VAL (MO)

Time period covered - 08/18/66 TO 11/29/67 (As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of digitized and plotted hourly values of total electron content through the ionosphere and the solar wind. These are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one reel of 35-mm microfilm generated at NSSDC from data supplied by the experimenter. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04B), 8 (67-123A-04B), and 9 (68-100A-03B), and Mariner 5 (67-060A-02B), and solar wind electron density plots from Pioneers 6 (65-105A-04E), 7 (60-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03D).

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU ON TAPE

NSSDC ID 66-075A-04D, CORRECTED ELECT DENSITY, TAPE

Time period covered - 08/17/66 TO 10/26/67 (As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of hourly values of normalized electron number density in the solar wind. To obtain these data, the ionospheric total content was removed from the observed total content values, and the total content path length was used to convert total content to density. The resulting values were then normalized to 1 AU assuming density to be proportional to the inverse square of the satellite-solar distance. Values resulting from interpolation are flagged. No interpolated values were recorded when data gaps exceeded 4 days. This data set is on one 800-bpi, 7-track, odd-parity, binary magnetic tape written on an IBM 7094 computer. Auxiliary data on the tape include UT and Carrington rotation number. Data are available for about 12 h per day when the spacecraft was in view from the Stanford transmitter. Identical data for other time periods from Pioneers 6 (65-105A-04D), 8 (67-123A-03C), and 9 (68-100A-03C), and Mariner 5 (67-060A-02C) also appear on this tape.

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED 1AU (MICROFILM)

NSSDC ID 66-075A-04E, CORRECTED ELECT DENS. PLOTS, 35MM

Time period covered - 09/12/66 TO 05/20/69 (As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of plots of electron density vs time in the solar wind. To obtain these data, the ionospheric total content for the same times at a nearby location was removed from the observed total content values. Then the observed total content path length was used to convert total content to density. The resulting values were normalized to 1 AU, assuming density to be proportional to the inverse square of the satellite-solar distance. This data set is on one reel of 35-mm microfilm. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04E), 8 (67-123A-03D), and 9 (68-100A-03D), and hourly values of total electron content from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), 9 (68-100A-03H), and Mariner 5 (67-060A-02B). This data set is also available on tape (66-075A-04D).

PIONEER 7, LEVY
SUPERIOR CONJUNCTION FARADAY ROTATION

Data set name - SUPERIOR CONJUNCTION FARADAY ROTATION DATA ON TAPE

NSSDC ID 66-075A-08A, SUPERIOR CONJUNCTION FARADAY ROT

Time period covered - 06/13/67 TO 07/19/67 (As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set contains reduced data in the form of card images (80-character records) on one 7-track, BCD, 556-bpi, single-file magnetic tape. The data are listings of the polarization angle (relative to the ecliptic plane) averaged in 200-s intervals, the standard deviation, and the average time and date (in decimal days) of the observations. The data are complete. Pioneer 6 data set 65-105A-08A is also contained on this tape.

PIONEER 7, MCCRACKEN
COSMIC-RAY ANISOTROPY

Data set name - COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 66-075A-05A, HOURLY COUNT RATES, MFILM LISTING

Time period covered - 08/18/66 TO 01/31/67 (As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed copy, generated

at NSSDC, of a hardcopy data listing supplied by the experimenter. There are two frames of microfilm for each full day of experiment operation, one frame for the mode with the sun near the middle of an angular sector and the other frame for the mode with the sun near a sector boundary. Data presented include hourly averaged count rates for each of four angular sectors and each of three energy windows, for the omnidirectional integral-energy mode, and for the estimated galactic component of this mode. Hourly averaged, omnidirectional (i.e., summed over sector counts), energy-window count rates are presented, as are measures of the amount of finer time scale data contributing to each hourly average. Daily averages of all the count rates are given, and 3-, 6-, and 12-h averages are given for the lowest energy window omnidirectional mode, for the integral-energy omnidirectional mode, and for the estimated galactic component of this mode. Daily measures of temporal percent coverages are also given, with considerable variation (from 0 to 100) in the percentages. Days for which no data exist are not found on the microfilm. The data are contained on one reel of 35-mm microfilm that also contains data set 66-075A-05B.

Data set name - COUNT RATE PLOTS ON MICROFILM

NSSDC ID 66-075A-05B, HOURLY COUNT RATES, MFILM PLOTS

Time period covered - 08/17/66 TO 01/28/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed copy, generated at NSSDC, of hardcopy count rate plots supplied by the experimenter. Each frame consists of data for 7 days. Hourly averaged count rates for the omnidirectional integral-energy and energy-window modes are presented, as are relative count rates from the Deep River Neutron Monitor. The data are contained on one reel of 35-mm microfilm that also contains data set 66-075A-05A.

PIONEER 7, NESS
SINGLE-AXIS MAGNETOMETER

Data set name - VECTOR MAGNETIC FIELD DATA, 30-SEC AVERAGES ON TAPE

NSSDC ID 66-075A-01A, 30 SEC VR MAGNETIC FIELD AVG,TAPE

Time period covered - 08/17/66 TO 02/25/67
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set consists of 7-track, 556-bpi, IBM 7094, binary tapes supplied by the experimenter. Each tape contains one file, and each physical record contains data for 1 h. Given are 30-s averages of the vector magnetic field components given in solar ecliptic coordinates. The number of points in each average (up to 30) and the standard deviation are given. Times of the averages and other supporting information are also given. There is no spacecraft ephemeris information.

Data set name - HOURLY AVERAGED VECTOR MAGNETIC FIELD DATA ON MICROFILM

NSSDC ID 66-075A-01B, HOURLY AVGD VR MAG FIELD, MFILM

Time period covered - 08/17/66 TO 10/29/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of a microfilmed (one 35-mm reel) version of Goddard X-document "Magnetic Field Measurements by Pioneer 7, 1-Hourly Averages (X-690-71-452)" by N. F. Ness and C. W. Ottens. Data presented in the document include hourly averaged magnetic field plots (magnitude, latitude, longitude) in spacecraft-centered solar ecliptic coordinates. Time coverage is nearly complete from launch until March 3, 1967, after which the coverage, as limited by spacecraft telemetry, is very spotty. Each of 17 frames contains plots for one solar rotation during the time period covered.

Data set name - TIME SEQUENCED INTERSPERSED PIONEER 6 + 7 HR AVERAGED MAGNETIC FIELD DATA ON TAPE

NSSDC ID 66-075A-01C, HR AVG PION 6 + 7 VECTORS ON TAPE

Time period covered - 08/17/66 TO 10/27/67
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of a magnetic tape generated by NSSDC personnel by extracting hourly averaged Pioneer 6 and 7 magnetic field data from a composite interplanetary magnetic field tape of the experimenter. The tape is 9-track, 1600-bpi, IBM/360 binary and has 16 data words per logical record and 50 logical records per physical record. The data in a logical record consist of time, hourly averaged field magnitude and field direction angles in solar ecliptic coordinates, standard deviations in field magnitude and in Cartesian components, number of 30-s averages in hourly averages, and a spacecraft identifier. There are 6375 and 4962 Pioneer 6 and Pioneer 7 data hours interspersed such that the entire tape is time sequenced.

PIONEER 7, SIMPSON
COSMIC-RAY TELESCOPE

Data set name - REDUCED COUNT RATE AND PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE

NSSDC ID 66-075A-06A, COUNT RATE + PULSE HEIGHT DATA

Time period covered - 08/17/66 TO 12/29/67
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

This data set consists of proton and alpha particle count and pulse-height analyzer accumulator readings in a time-ordered format on 7-track, binary, IBM 7094 compatible magnetic tapes written at 800 bpi. The time resolution for the count accumulator data ranged from about one measurement per 0.4 to 28 s depending on the spacecraft telemetry rate. The tape format consists of physical records each 6000, 6-bit bytes in length. Each physical record consists of 500 logical records of 12 bytes each. The logical records include header and data logical records. A given header logical record is followed by from 1 to 64 data logical records of the same spacecraft subcommutated sequence. Each tape terminates with an EOF flag in the last good data record. Each header logical record includes various spacecraft temperatures, spin rate, telemetry bit rate, and other housekeeping parameters. Each data logical record includes time, pulse height analyzer output, four telescope coincidence count rates, and data quality information. The data are uncorrected but have been edited to the extent that doubtful information has been flagged and unusable data have been deleted.

Data set name - COUNT RATE PLOTS (COUNTS/SEC VS DAY NUMBER) AND TRAJECTORY PLOT ON MICROFILM

NSSDC ID 66-075A-06D, COUNT RATE PLOTS,27 DAYS EACH

Time period covered - 08/17/66 TO 12/27/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

The data set is contained on one reel of 16-mm microfilm which includes (1) a plot of the Pioneer 7 trajectory in heliocentric solar ecliptic coordinates covering the time interval from day 229 of 1966 (August 17, 1966) to day 190 of 1971 (July 9, 1971) and (2) count rate plots (counts per second vs day number) produced on a Calcomp plotter for 27-day intervals for the telescope coincidence combination which correspond to the following energy interval for protons: 0.6 to 12.7 MeV, 12.7 to 73.0 MeV, 7.0 to 165 MeV, and e>165 MeV. The count rate data are a composite of real-time data and duty cycle storage data and cover the time interval from August 17, 1966, to December 27, 1968.

Data set name - COSMIC-RAY PROTON COUNTING RATES PUBLISHED IN 'SOLAR GEOPHYSICAL DATA'

NSSDC ID 66-075A-06E, SGD PBLSHD CR PROTON COUNT RATES

Time period covered - 03/07/69 TO 08/07/71
(As verified by NSSDC)

Quantity of data - 32 BOOKS OR BOUND VOLUMES

This data set consists of monthly tabular listings of directional counting rates of protons with energies in the intervals 0.6 to 12.7 MeV, 12.7 to 165 MeV, and greater than 165 MeV. The rates are typically given once per day. A letter flag indicates whether the flux was rising, steady, or falling at the time for which the data are presented. Data obtained during a given month are published in "Solar Geophysical Data (Prompt Reports)" with a 1-month lag.

PIONEER 7, WOLFE
ELECTROSTATIC ANALYZER

Data set name - PLOTS OF ANALYZED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 66-075A-03A, PLOTS OF PLASMA PARAMETERS

Time period covered - 08/17/66 TO 02/09/69
(As verified by NSSDC)

Quantity of data - 11 REELS OF MICROFILM

These analyzed data were supplied by the experimenter and consist of time-ordered plots of the following solar wind parameters: (1) proton number density (protons/cu cm), (2) azimuth (solar ecliptic longitude) of the peak particle flux for ions (deg), (3) bulk velocity (km/s), (4) polar angle (solar ecliptic latitude) of the peak particle flux (deg), (5) proton temperature and helium temperature (deg), (6) helium/hydrogen ratio (number of helium ions/cu cm/number of protons/cu cm), (7) electron temperature (deg K), and (8) two indicators of the anisotropy in the solar plasma ion temperature distribution. The experimenter gives the following indicators of accuracy: (1) bulk velocity, good to within 10%, (2) direction, good to a few degrees, and (3) temperature and density, could be off by as much as 200%. The plots are available on 16-mm microfilm. The plasma parameters were derived by the experimenter based on the assumption of an isotropic Maxwellian distribution function (in the frame moving with the bulk solar wind velocity). Data are available from August 17, 1966, to December 1966, with a 90% coverage; from December 1966, to March 1967, with a 50% coverage; and from March 1967, to November 19, 1968, with a 10% coverage.

Data set name - PUBLISHED PRELIMINARY SOLAR WIND PARAMETERS

NSSDC ID 66-075A-03B, SOLAR GEOPHYS DATA PBLSD SOLAR WD

Time period covered - 05/21/75 TO 05/21/75
(As verified by NSSDC)

Quantity of data - 56 BOOKS OR BOUND VOLUMES

This data set consists of preliminary solar wind parameters presented in the monthly publication "Solar-Geophysical Data" issued by the NOAA Environmental Research Laboratories. These parameters are determined by measurements on the Pioneer 6 and 7 space probes. The information given consists of date, time, spacecraft, pass number, bulk velocity, and corotation delay time. The bulk velocity is accurate to 10%. The corotation delay time is the number of days between the observation at the spacecraft and the subsequent observation at the earth of the corotating interplanetary magnetic flux tube (assuming that the solar wind speed reported remains constant). Typically, there is one velocity value given for each satellite per day. On about 30% of the days, no data are given. There is a 1-month lag between the time the data are acquired and the time the data are published.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS

NSSDC ID 66-075A-03C, HR AVG PLASMA PARAM ON MAG TAPE

Time period covered - 08/19/66 TO 11/28/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These analyzed data, supplied by the experimenter, consist of time-ordered hourly averages of the following solar wind parameters: the alpha/proton number density ratio, the proton number density, the alpha particle temperature (deg K), the proton temperature (deg K), the bulk velocity (km/s), the azimuthal angle (solar ecliptic longitude) of the peak particle flux (deg), and the polar angle (solar ecliptic latitude) of the peak particle flux (deg). The above plasma parameters are good to 10%. The data were derived by the experimenter based on the assumption of an isotropic Maxwellian distribution function (in the frame moving with the bulk solar wind velocity). The data are contained on one 9-track, IBM 360, binary magnetic tape written at a density of 800 bpi. The tape is written with variable length unblocked records. The data consist of all the high bit rate data and have a 90% coverage over the period indicated. A microfilmed computer listing of these tapes is available at NSSDC as 66-075A-03D.

Data set name - HOURLY AVERAGED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 66-075A-03D, HOURLY AVERGD PLASMA PARAM - MFLM

Time period covered - 08/19/66 TO 11/28/66
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was microfilmed by NSSDC from a computer printout of data set 66-075A-03C.

********** PIONEER 8 **********

Data set name - MULTI-COORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 67-123A-00D, EPHEMERIS TAPES

Time period covered - 12/13/67 TO 11/15/71
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

Complete trajectory information was supplied by the Pioneer Project Office at Ames Research Center and is contained on six 7-track, 800-bpi, IBM 7094, binary magnetic tapes. Each tape has one file. A Fortran IV program which reads the tapes and prints out the data is available. Each tape was generated by JPL. The tapes consist of trajectory information, described below, predicted from orbit elements which were themselves determined from observed trajectory data. Thus the tapes overlap in time period covered. For the most accurate trajectory information, the tape whose start time is closest to the date required should be used. The Pioneer 8 trajectory tapes cover the following time periods: December 13, 1967, to June 30, 1968; December 16, 1967, to July 3, 1968; March 15, 1968, to March 15, 1969; July 25, 1968, to July 25, 1969; July 20, 1969 to July 20, 1971; and November 15, 1969, to November 15, 1971. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth when the interval may be shorter) on each of the trajectory tapes: (1) date, (2) time, (3) distance from earth to probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semidiameter of earth where the angular semidiameter would be the probe-centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane-of-date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun to earth vector, z axis is toward the ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth to probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the vector along the earth's spin axis and the earth-to-probe vector and the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane-of-date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID 67-123A-00E, COMPRESSED EPHEMERIS TAPES

Time period covered - 12/13/67 TO 11/15/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set which contains complete trajectory information was generated at NSSDC by taking the most accurate information from each ephemeris tape provided by JPL (data set 67-123A-00D) and eliminating overlap. The data set consists of one 7-track, IBM 7094, 800-bpi, binary magnetic tape. Each logical record contains 89 words, and each physical record contains 20 logical records. The following information is

available in intervals of 1 day (except for periods when the spacecraft is close to the earth, when the interval may be shorter): (1) date, (2) time, (3) distance from the earth to the probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe-centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun-to-earth vector, z axis is toward ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date, (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth-to-probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COROTATION DELAY TIME PLOTS AND LISTINGS ON MICROFILM

NSSDC ID 67-123A-00F, COROTATION DELAY TIME LISTINGS

Time period covered - 12/13/67 TO 11/01/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was derived from part of data set 67-123A-00E by printing out time, the earth-sun-Pioneer angle, the sun-Pioneer distance, and the earth-sun distance. From this information, the corotation delay times for solar wind velocities of 200, 400, and 600 km/s were derived for each time. This data set includes listings of the above as well as plots of the earth-sun-Pioneer angle, the sun-Pioneer range, and the corotation delay times (for a solar wind velocity of 400 km/s) for each of the Pioneers. At least one point is given per week, with more frequent coverage for most of the time.

PIONEER 8, ESHLEMAN
TWO-FREQUENCY BEACON RECEIVER

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON PUNCHED CARDS

NSSDC ID 67-123A-03A, TOTAL ELECT CONTENT, HRLY VAL(DD)

Time period covered - 12/14/67 TO 08/25/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of digitized hourly values of total electron content through the ionosphere and the solar wind. These values are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on 556-bpi, 7-track, BCD magnetic tape generated at NSSDC from punched cards supplied by the experimenter. The tape also contains identical data for other time periods from Pioneers 6 (65-105A-04A), 7 (60-075A-04A), and 9 (68-100A-03A), and Mariner 5 (67-060A-02A).

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MICROFILM

NSSDC ID 67-123A-03B, TOTAL ELECT CONTENT,HRLY VAL (MD)

Time period covered - 12/14/67 TO 08/25/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of digitized and plotted hourly values of total electron content through the ionosphere and the solar wind. These values are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one reel of 35-mm microfilm generated at NSSDC from data supplied by the experimenter. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 9 (68-100A-03B), and Mariner 5 (67-060A-02B), and solar wind electron density plots from Pioneers 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03B).

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU ON TAPE

NSSDC ID 67-123A-03C, CORRECTED ELECT DENSITY, TAPE

Time period covered - 12/19/67 TO 03/07/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of hourly values of normalized electron number density in the solar wind. To obtain these data, the ionospheric total content was removed from the observed total content values, and the total content path length was used to convert total content to density. The resulting values were then normalized to 1 AU assuming density to be proportional to the inverse square of the distance of the satellite from the sun. Values resulting from interpolation are flagged. No interpolated values were recorded when data gaps exceeded 4 days. This data set is on 800-bpi, 7-track, odd-parity, binary magnetic tape created on a Xerox Sigma 5 computer. Auxiliary data on the tape include UT and Carrington rotation number. Data are available for about 12 h per day when the spacecraft was in view from the Stanford transmitter. Identical data for other time periods from Pioneers 6 (65-105A-04D), 7 (66-075A-04D), 9 (68-100A-03C), and Mariner 5 (67-060A-02C) also appear on this tape.

Data set name - MICROFILM PLOTS OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU

NSSDC ID 67-123A-03D, CORRECTED ELECT DENS. PLOTS, 35MM

Time period covered - 02/20/68 TO 08/30/70
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of plots of electron density vs time in the solar wind. To obtain these data, the ionospheric total content for the same times at a nearby location were removed from the observed total content values. Then the observed total content path length was used to convert total content to density. The resulting values were normalized to 1 AU, assuming density to be proportional to the inverse square of the satellite-solar distance. This data set is on one reel of 35-mm microfilm. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04E), 7 (66-075A-04E), and 9 (68-100A-03D), and hourly values of total electron content from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), 9 (68-100A-03B), and Mariner 5 (67-060A-02B). This data set is also available on tape (67-123A-03C).

PIONEER 8, MCCRACKEN
COSMIC-RAY ANISOTROPY

Data set name - 7.5-MIN AND 1-HR COUNT RATES FOR ALL MODES ON MAGNETIC TAPE

NSSDC ID 67-123A-05A, 7 MIN AND 1 HR COUNT RATES, TAPES

Time period covered - 12/13/67 TO 03/31/69
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

This data set consists of experimenter-supplied 9-track magnetic tapes, written in EBCDIC at 800 bpi on an IBM 370/155. Each tape contains 80 days of data, and each logical and physical record contains 1 h of data. Each data record

contains time and counts at 7.5-min intervals and for the full hour for each isotropic and anisotropic mode. The time coverage of the tapes mirrors the periods during which the spacecraft was being tracked (nearly 100% until October 1968, and then between 60 and 90% through March 1969). Data for times after March 1969 are found in microfilm data set 67-123A-05B. The experimenter also provided a program to generate listings such as those found in data set 67-123A-05B from the tapes of this data set 67-123A-05A.

Data set name - 7.5-MIN AND 1-HR COUNT RATES, ALL MODES, ON MICROFILM

NSSDC ID 67-123A-05B, 7 MIN AND 1 HR COUNT RATES, FILM

Time period covered - 03/21/69 TO 12/31/70
(As verified by NSSDC)

Quantity of data - 3 REELS OF MICROFILM

This data set consists of 16-mm microfilm generated at NSSDC from experimenter-supplied computer printout. Each frame contains data matrices for 1 h. Counts accumulated during indicated numbers of spacecraft revolutions for 7.5-min intervals and for full hours are given for all isotropic and anisotropic counting modes. Data coverage begins at the time the coverage in tape data set 67-123A-05A ends. The data coverage for the later time period covered by this microfilm data set runs between 50 and 75% per week.

PIONEER 8, NESS
SINGLE-AXIS MAGNETOMETER

Data set name - HOURLY AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MICROFILM

NSSDC ID 67-123A-01A, HOURLY AVERAGED VECTORS, PLOTS

Time period covered - 12/23/67 TO 12/07/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of one reel of 35-mm microfilm containing analog plots of hourly averaged magnetic field components (magnitude, latitude, longitude) in a spacecraft-centered solar ecliptic coordinate system. Each of the 13 data frames contains data for one solar rotation. The time coverage is nearly complete for most of the interval covered. The data and documentation are found in "Magnetic Field Measurements by Pioneer 8 I. Hourly Averages of the Field Elements during Time Period Covered (Bartels' Solar Rotation 1839 to 1851)" by F. Mariani, N. F. Ness, and B. Bavassano, Laboratorio di Ricerca e Tecnologia per lo Studio del Plasma Nello Spazio, LPS-71-22, July 1971.

Data set name - MAGNETIC FIELD VECTOR 30-SEC AVERAGES ON TAPE

NSSDC ID 67-123A-01B, 30-SEC VR MAG FIELD AVGS ON TAPE

Time period covered - 12/13/67 TO 12/03/68
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set consists of three 7-track, 800-bpi, multifile UNIVAC 1108 binary tapes submitted by the experimenter. Each file contains data for about 1 day. Each physical record contains, in 726 words, packed data for 1 hour. The data consist of time and 30-s averages of magnetic field magnitude, solar ecliptic Cartesian components, autocorrelation functions, and cross-correlation functions. The data coverage is nearly complete over the time period covered, although over the last month or so there are several data gaps of about a day's duration. An unpacking routine that was submitted to NSSDC by the experimenter and which results in a printout designed by him is available. This is a FORTRAN program that runs on the UNIVAC 1108. A slightly modified IBM 7094 version is also available. Alternatively, a detailed format statement is available for users wishing to unpack the data in a different way.

Data set name - HOURLY AVERAGED MAGNETIC FIELD VECTORS ON MAGNETIC TAPE

NSSDC ID 67-123A-01C, HOURLY AVERAGED VECTORS, MAG TAPE

Time period covered - 12/17/67 TO 12/30/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This hourly averaged vector data set is on magnetic tape written at 1600 bpi, 9-track, binary. The data were created on an IBM 360 computer with each physical record containing the hourly averages for 1 day. The first three words of each physical record are the year, month, and day; the remaining words are stored in a matrix 14 x n where each column of 14 words contains all the information for one hourly average. That information includes hour (starting time) of the first average, number of 30-s averages in the hour, number of data points, hourly averages of the x, y, z components of the magnetic field and magnetic field intensity, standard deviation for x, y, and z, and hourly averages of standard deviation delta x of x, delta y of y, and delta z of z components for 30-s averages. All quantities are in a solar-ecliptic frame of reference (x-axis toward the sun) centered on the spacecraft. All field quantities are given in units of nanoteslas.

PIONEER 8, SCARF
PLASMA WAVE DETECTOR

Data set name - REDUCED ELECTRIC FIELD DATA ON MICROFILM

NSSDC ID 67-123A-07A, FINE TIME SCALE E-FIELD SPECTRUM

Time period covered - 12/13/67 TO 10/07/68
(As verified by NSSDC)

Quantity of data - 16 REELS OF MICROFILM

These 16 reels of 35-mm microfilm contain reduced data plots of the broadband output, the 400-Hz output, and the 22-kHz output after calibration and in the finest time scale available from the telemetered data. The appropriate statistical information accumulated over each experiment cycle is also included. It is noted that the experiment cycle depends on the bit rate of the transmitter and varies from 7.47 min to 1 h for one broadband measurement of 16 steps and for sixteen 400-Hz and sixteen 22-kHz measurements. The 22-kHz channel was degraded considerably from spacecraft interference and was useful only when strong 22-kHz signals were present in the ambient plasma, such as near the earth or at the passage of an interplanetary shock.

Data set name - SUMMARY PLOTS OF EACH EXPERIMENT CYCLE ON MICROFILM

NSSDC ID 67-123A-07B, SUMMARY PLOTS, ELECT FLD. DET.

Time period covered - 12/13/67 TO 09/23/68
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

These data on two reels of experimenter-generated 35-mm microfilm, summarize data set 67-123A-07A. They contain maximum and minimum 400-Hz level, maximum and minimum 22-kHz level, and the average of two (step 7) 100-Hz broadband levels presented for each experiment cycle (1024 main telemetry frames) in the full data plots. They represent about one to eight data points per hour.

PIONEER 8, WEBBER
COSMIC-RAY GRADIENT DETECTOR

Data set name - 20-MIN AVERAGES OF PARTICLE COUNT RATES ON MICROFILM

NSSDC ID 67-123A-06A, 20MIN AVG TELESCOPE RATE PLOTS

Time period covered - 12/13/67 TO 04/10/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of microfilmed copies of experimenter-generated plots of 20-min averaged count rates for all coincidence modes and discrimination states except for the alpha particle count rates. (The alpha particle count rates are found in data set 67-123A-06B.)

Data set name - 8-HR AVERAGES OF ALPHA PARTICLE COUNT RATES ON MICROFILM

NSSDC ID 67-123A-06B, 8 HR AVG TELESCOPE RATE PLOTS

Time period covered - 12/13/67 TO 04/21/68
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of microfilmed copies of three experimenter-generated plots of 8-h averaged alpha particle

count rates covering the period December 13, 1967, through April 15, 1968. These plots are found on the same microfilm reel which contains the proton plots (67-123A-06A).

Data set name - PROTON COUNT RATES PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA'

NSSDC ID 67-123A-06C, SGD PBLSHD PROTON COUNT RATES

Time period covered - 12/01/69 TO 05/28/75
(As verified by NSSDC)

Quantity of data - 52 BOOKS OR BOUND VOLUMES

This data set consists of monthly tabular listings of count rates of protons with energies above 13.9 and 64 MeV. Typically, four count rates per energy channel per day were given in the early life of the spacecraft. In late 1971, only a few count rates per month were given, and for January 1973, one count rate was given. Data obtained during a given month were published (as of November 1971) in "Solar-Geophysical Data (Prompt Reports)" with a 1-month lag.

Data set name - DAILY AVERAGED COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 67-123A-06D, DAILY AVG RATE, MFILM LISTING

Time period covered - 12/13/67 TO 11/05/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm generated at NSSDC from experimenter-supplied computer printout. Daily averaged count rates and standard errors (less than 1% of count rate) are listed for both Pioneers 8 and 9 for modes T1+2 and T5. Mode T1+2 corresponds to electrons above 8.4 MeV and nuclei above 64 MeV/n on Pioneer 8 and to electrons above 5.1 MeV and nuclei above 42 MeV/n on Pioneer 9. Mode T5 corresponds to electrons above 0.6 MeV and nuclei above 14 MeV/n on Pioneers 8 and 9. Data gaps near the end of the time period covered reflect decreasing spacecraft tracking.

Data set name - DAILY AVERAGED COUNT RATE PLOTS ON MICROFILM

NSSDC ID 67-123A-06E, DAILY AVGD RATES,MFILM PLOTS

Time period covered - 12/13/67 TO 11/06/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 35-mm microfilm generated at NSSDC from experimenter-supplied hardcopy plots. Daily averaged count rates for modes T1+2 and T5 are plotted with 1 year of data per frame. Pioneer 8 and 9 data frames are interspersed. For each spacecraft, mode, and year, there are two plots. One of these has a linear count rate scale, and the other has a logarithmic count rate scale. Data gaps which reflect the lack of spacecraft tracking become increasingly abundant near the end of the time period of coverage.

PIONEER 8, WOLFE
ELECTROSTATIC ANALYZER

Data set name - ANALYZED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 67-123A-02A, PLASMA PARAMETERS

Time period covered - 12/14/67 TO 01/05/74
(As verified by NSSDC)

Quantity of data - 36 REELS OF MICROFILM

These analyzed data were supplied by the experimenter and consist of time-ordered plots of the following solar wind parameters: (1) proton number density (protons/cu cm), (2) azimuth (solar ecliptic longitude) of the peak particle flux for ions (deg), (3) bulk velocity (km/s), (4) polar angle (solar ecliptic latitude) of the peak particle flux (deg), (5) proton temperature and helium temperature (deg), (6) helium/hydrogen ratio (number of helium ions/cu cm/number of protons/cu cm), (7) electron temperature (deg K), and (8) two indicators of the anisotropy in the solar plasma ion temperature distribution.

********** PIONEER 9 **********

Data set name - MULTI-COORDINATE SYSTEM EPHEMERIS TAPES

NSSDC ID 68-100A-00D, EPHEMERIS TAPES

Time period covered - 11/08/68 TO 04/16/72
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

Complete trajectory information was supplied by the Pioneer Project Office at Ames Research Center. The data are contained on six 7-track, 800-bpi, IBM 7094, binary magnetic tapes. Each tape has one file. A Fortran IV program which reads the tapes and prints out the data is available. Each tape was generated by JPL. The tapes consist of trajectory information described below, predicted from orbit elements which were themselves determined from observed trajectory data. Thus, the tapes overlap in time period covered. For the most accurate trajectory information the tape whose start time is closest to the date required should be used. The Pioneer 9 trajectory tapes cover the following time periods -- 11/08/68 to 07/26/71, 11/10/68 to 06/08/69, 04/15/69 to 08/15/69, 08/15/69 to 08/16/71, 12/15/69 to 12/15/71, 04/15/70 to 04/15/71. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth when the interval may be shorter) on each of the trajectory tapes: (1) date, (2) time, (3) distance from earth to probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle, (16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun centered system, x axis is along the sun to earth vector, z axis is toward the ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric, Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinates (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth to probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the vector along the earth's spin axis and the earth to probe vector and the plane defined by the earth to probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun to probe vector), (26) celestial longitude of probe (angular distance measured counter-clockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COMPRESSED EPHEMERIS DATA ON MAGNETIC TAPE

NSSDC ID 68-100A-00E, COMPRESSED EPHEMERIS TAPES

Time period covered - 11/08/68 TO 04/16/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set which contains complete trajectory information was generated at NSSDC by taking the most accurate information from each ephemeris tape and eliminating overlap. The data set consists of one 7-track, IBM 7094, 800-bpi, binary magnetic tape. Each logical record contains 89 words, and each physical record contains 20 logical records. The following information is available in intervals of 1 day (except for periods when the spacecraft is close to the earth, when the interval may be shorter) -- (1) date, (2) time, (3) distance from the earth to the probe, (4) distance from the earth to the sun, (5) distance from the earth to the moon, (6) distance from the sun to the probe, (7) geocentric right ascension and declination of probe, sun, moon, (8) geocentric latitude, longitude, and altitude above the earth, (9) earth-sun-probe angle, (10) earth-probe-sun angle, (11) sun-probe-near limb of earth angle (sun-probe-earth angle minus the angular semi-diameter of earth where the angular semi-diameter would be the probe-centered angle between earth limb and center of earth), (12) moon-earth-probe angle, (13) moon-probe-sun angle, (14) earth-probe-moon angle, (15) Canopus-probe-earth angle,

(16) Canopus-probe-sun angle, (17) angle made by the sun to probe vector and the ecliptic plane of date, (18) x, y, z components of spacecraft in the sun-earth line coordinate system (sun-centered system, x axis is along the sun-to-earth vector, z axis is toward ecliptic north pole), (19) longitude of spacecraft in the sun-earth line coordinate system, (20) x, y, z components of spacecraft in geocentric, selenocentric, heliocentric Venus-centered, Mars-centered, Saturn-centered, and Jupiter-centered inertial coordinate (x points to vernal equinox, z points along the north pole vector with the reference plane being the earth's true equator of date), (21) magnitude of the velocity vector and x, y, z components of the velocity vector in geocentric inertial coordinates, (22) geocentric inertial path angle (angle made by probe velocity vector and plane normal to earth-to-probe vector), (23) geocentric inertial azimuth angle (angle between the plane defined by the earth-to-probe vector and the geocentric inertial velocity vector), (24) heliocentric inertial velocity, (25) heliocentric inertial path angle (angle made by the heliocentric velocity vector and the plane normal to the sun-to-probe vector), (26) celestial longitude of probe (angular distance measured counterclockwise along the ecliptic plane of date from the vernal equinox to the projection of the sun-probe vector on a plane as viewed from the ecliptic north pole), (27) celestial longitude of earth, (28) celestial latitude of earth, and (29) various clock angles and hinge and swivel angles which are described in the documentation.

Data set name - COROTATION DELAY TIME PLOTS AND LISTINGS ON MICROFILM

NSSDC ID 68-100A-00F, COROTATION DELAY TIME LISTINGS

Time period covered - 11/00/68 TO 04/01/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set was derived from part of data set 68-100A-00E by printing out time, the earth-sun-Pioneer angle, the sun-Pioneer distance, and the earth-sun distance. From this information, the corotation delay times for solar wind velocities of 200, 400, and 600 km/s were derived for each time. This data set includes listings of the above as well as plots of the earth-sun-Pioneer angle, the sun-Pioneer range, and the corotation delay times (for a solar wind velocity of 400 km/s) for each of the Pioneers. At least one point is given per week, with more frequent coverage for most of the time.

Data set name - CHARTS OF PRELIMINARY TRAJECTORIES

NSSDC ID 68-100A-00G, PRELIMINARY TRAJ. CHARTS

Time period covered - (N/A)

Quantity of data - 1 PAGE OF UNBOUND HARDCOPY

This data set consists of two sets of charts of preliminary trajectories provided by JPL. One set of charts is for the spacecraft Pioneer E (69-075X launched August 27, 1969, but failed to attain orbit), Pioneer F (Pioneer 10 -- 72-012A), and Pioneer G (Pioneer 11 -73-019A). This set can be used to determine the position of the spacecraft with respect to the earth-sun line at various times into the missions. A user can determine the estimated telemetry bit rate that will be used as a function of position of the spacecraft with respect to the sun, and as a function of the various communication antennas available to receive the data. The reverse side of the chart contains similar information for Mariner 71 (Mariner 9 -- 71-051A), Mariner J (Mariner 10 -- 73-085A), Helios (Helios-A -- 74-097A), and Pioneer 9 (68-100A) superimposed on the Pioneer E, F, and G trajectories. The second set of charts is similar to the first but contains Mariner 9, Pioneer 10, Pioneer 11, Mariner 10, and Helios-A on one side, and Pioneer 10 and Pioneer 11 on the other side. Both sets of charts can be used to determine the direct line-of-sight viewing period.

PIONEER 9, ESHLEMAN
TWO-FREQUENCY BEACON RECEIVER

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON PUNCHED CARDS

NSSDC ID 68-100A-03A, TOTAL ELECT CONTENT, HRLY VAL(DD)

Time period covered - 11/08/68 TO 07/16/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of digitized hourly values of total electron content through the ionosphere and the solar wind. These values are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on 556-bpi, 7-track, BCD magnetic tape generated at NSSDC from punched cards supplied by the experimenter. The tape also contains identical data for other time periods from Pioneers 6 (65-105A-04A), 7 (66-075A-04A), and 8 (67-123A-03A), and Mariner 5 (67-060A-02A).

Data set name - HOURLY VALUES OF REDUCED TOTAL ELECTRON CONTENT DATA ON MICROFILM

NSSDC ID 68-100A-03B, TOTAL ELECT CONTENT,HRLY VAL (MO)

Time period covered - 11/09/68 TO 07/16/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of digitized and plotted hourly values of total electron content through the ionosphere and the solar wind. These values are reduced data calculated from measurements of the differential delay of the group velocity. The hourly data are representative values manually selected from analog records. Each set of hourly values is for the portion of the day (about 12 h per day) when the spacecraft was in view from the Stanford transmitter. This data set is on one reel of 35-mm microfilm generated at NSSDC from data supplied by the experimenter. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), and Mariner 5 (67-060A-02B), and solar wind electron density plots from Pioneers 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), and 9 (68-100A-03D).

Data set name - DIGITAL VALUES OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU ON TAPE

NSSDC ID 68-100A-03C, CORRECTED ELECT DENSITY, TAPE

Time period covered - 11/11/68 TO 03/07/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of hourly values of normalized electron number density in the solar wind. To obtain these data, the ionospheric total content was removed from the observed total content values, and the total content path length was used to convert total content to density. The resulting values were then normalized to 1 AU assuming density to be proportional to the inverse square of the satellite-solar distance. Values resulting from interpolation are flagged. No interpolated values were recorded when data gaps exceeded 4 days. This data set is on one 800-bpi, 7-track, odd-parity, binary magnetic tape written on an IBM 7094 computer. Auxiliary data on the tape include UT and Carrington rotation number. Data are available for about 12 h per day when the spacecraft was in view from the Stanford transmitter. Identical data for other time periods from Pioneers 6 (65-105A-04D), 7 (66-075A-04D), and 8 (67-123A-03C), and Mariner 5 (67-060A-02C) also appear on this tape.

Data set name - MICROFILM PLOTS OF SOLAR WIND ELECTRON DENSITY VS TIME NORMALIZED TO 1 AU

NSSDC ID 68-100A-03D, CORRECTED ELECT DENS. PLOTS, 35MM

Time period covered - 04/04/69 TO 08/27/70
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were prepared from the original analog records by the experimenter's staff. The primary data consist of plots of electron density vs time in the solar wind. To obtain these data, the ionospheric total content for the same times at a nearby location were removed from the observed total content values. Then the observed total content path length was used to convert total content to density. The resulting values were normalized to 1 AU, assuming density to be proportional to the inverse square of the satellite-solar distance. This data set is on one reel of 35-mm microfilm. This reel of microfilm also contains identical data for other time periods from Pioneers 6 (65-105A-04E), 7 (66-075A-04E), and 8 (67-123A-03D), and hourly values of total electron content from Pioneers 6 (65-105A-04B), 7 (66-075A-04B), 8 (67-123A-03B), and 9 (68-100A-03B), and Mariner 5 (67-060A-02B). This data set is also available on tape (68-100A-03C).

Data set name - PLOTS + LISTINGS OF BEACON AMPLITUDE SCINTILLATION DUE TO SOLAR WIND TURBULENCE

NSSDC ID 68-100A-03E, PUBLISHED BEACON SCINT OBS

Time period covered - 12/00/68 TO 00/00/73
(Date supplied by experimenter)

Quantity of data - 3 BOOKS OR BOUND VOLUMES

These data consist of 79 records for each of two frequencies. Each record covers a 29.75 s period. Within each record, about 900 observations of signal strength are normally received at the spacecraft from the Stanford transmitter. These records were taken over a period of about 4 yr, i.e., from an earth-sun-Pioneer-angle (ESPA) of 358 deg around through conjunction (ESPA=360 deg) and occultation (ESPA=180 deg), to ESPA=333 deg. Records are most frequent near occultation, i.e., between ESPA=147 through 214 deg. These reduced and analyzed data are presented in four different formats. The first form is contained in one volume and consists of plots of signal intensity (dBm) vs time (measured from the beginning of each record). In this form there is one record per page. The second form is contained in a second volume. It is printed from computer listings and gives digital values of signal intensities shown in the plots. The third form consists primarily of four different analysis plots and a calculated scintillation index. An autocorrelation plot, using selected signal intensity observations from each record, is presented along with three different spectral plots. The last form consists of digital values used in these spectral analyses. They are included as listings subsequent to the spectral plots in the third volume. In addition to the observations already described, there are 14 additional amplitude calibration records included in the first volume in the same form as the data plots in that volume. The digital forms of the data described here are also available on tape (data set 68-100A-03F).

Data set name - DIGITAL RECORDS OF BEACON AMPLITUDE SCINTILLATION DUE TO SOLAR WIND TURBULENCE

NSSDC ID 68-100A-03F, BEACON SCINTILLATION OBS ON TAPE

Time period covered - 12/00/68 TO 00/00/73
(Date supplied by experimenter)

Quantity of data - 1 REEL OF TAPE

These data, written on 9-track, 800-bpi magnetic tape in binary format, consist of 79 records for each of two frequencies. Each record covers a 29.75-s time period. Within each record are normally about 900 observations of signal strength received at the spacecraft from the Stanford transmitter. These records were taken over a period of about 4 years, i.e., from an earth-sun-Pioneer-angle (ESPA) of 358 deg around through conjunction (ESPA=360 deg) and occultation (ESPA=180 deg) to ESPA=333 deg. Records are most frequent near occultation (ESPA between 147 and 214 deg). The tape lists digital values of signal intensity (dBm) versus time (measured from the beginning of each record). It also lists derived values used in obtaining spectral analyses of these observations.

PIONEER 9, MCCRACKEN
COSMIC-RAY ANISOTROPY

Data set name - 7.5-MIN AND 1-HR COUNT RATES ON MICROFILM

NSSDC ID 68-100A-05A, PRTCL COUNT RATES MFILM LISTINGS

Time period covered - 11/08/68 TO 09/25/70
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of 16-mm microfilm, generated at NSSDC from experimenter-supplied computer printout. Each frame contains data matrices for 1 hour. Counts accumulated during indicated numbers of spacecraft revolutions for 7.5-min intervals and for 1-h intervals are given for all isotropic and anisotropic counting modes. Two years of data are contained in the data set, but the coverage is very low in the later part of that time period, because of greatly decreased spacecraft tracking.

PIONEER 9, SCARF
ELECTRIC FIELD DETECTOR

Data set name - PLOTS OF HOURLY AVERAGED BROADBAND AND 400-HZ WAVE LEVELS

NSSDC ID 68-100A-07A, E-FLD HR AVG BROAD BAND,400HZ,AP

Time period covered - 11/08/68 TO 02/27/69
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data consist of five experimenter-generated hourly averaged plots of broadband wave level and 400-Hz wave level, both in mV, from the TRW electric field experiment on Pioneer 9. The data are about 80% complete. For convenience, the hourly averaged AP index has been included with these data.

Data set name - MICROFILMED FINE TIME SCALE E-FIELD SPECTRUM DATA

NSSDC ID 68-100A-07B, FINE TIME SCALE E-FIELD SPECTRUM

Time period covered - 11/09/68 TO 09/07/69
(As verified by NSSDC)

Quantity of data - 9 REELS OF MICROFILM

These original 35-mm microfilm plots were generated at NASA/AMES for TRW. They are one of three reduced data outputs from the E-field experiment. Included are the count rates for each of the eight levels in the pulse-height height analysis, the 400-Hz and 30-kHz wave amplitudes, and calculated statistics based on these measurements. The statistics include the average standard deviation and the maximum and minimum of the eight 400-Hz wave amplitudes and of the eight 30-kHz wave amplitudes observed during the eight-point pulse-height analysis. Ephemeris data are also included.

Data set name - FRAME SUMMARY PLOTS OF 100 HZ, 400 HZ, AND 30 KHZ E-FIELD AMPLITUDES ON FILM

NSSDC ID 68-100A-07C, E-FIELD SUMMARY PLOTS ON M/FILM

Time period covered - 12/03/68 TO 09/06/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

These data represent summaries of data presented in data set 68-100A-07B. Plotted against common time are the 100-Hz amplitude in mV for each frame, and max and min 400-Hz and 30-kHz amplitudes in mV for each frame. These data are on experimenter-generated 35-mm microfilm.

Data set name - FINE-TIME SCALE 100 HZ, 400 HZ, AND 30 KHZ ELECTRIC FIELD AMPLITUDES ON TAPE

NSSDC ID 68-100A-07D, E-FIELD (100,400,3.E4 HZ) ON TAPE

Time period covered - 11/08/68 TO 07/03/69
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These magnetic tapes made at NSSDC from experimenter-supplied data tapes contain all probably correct data from the Pioneer 9 experiment in both reduced and packed raw form. Logical tests were made on the time words during tape copying to assure that scrambled, and thus unintelligible data records, were not retained. Records containing all zeros were not deleted, and some files may contain no data records. The data are on 800-bpi binary, 7-track tapes with numerous files per tape. Each file contains a 648 character BCD header record followed by 450 binary 36-bit word data records (2700 characters). Each physical record contains one logical record. Each logical record includes eight sets of eight 100-Hz measurements, sixty-four 400-Hz and 30-kHz amplitude measurements, times for each measurement, and satellite ephemeris.

PIONEER 9, SONETT
TRIAXIAL MAGNETOMETER

Data set name - 30-SEC AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MICROFILM

NSSDC ID 68-100A-01A, 30 SEC AVG MAG FIELD VRS ON MFILM

Time period covered - 11/08/68 TO 06/13/69
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of 35-mm microfilm generated at NSSDC from hardcopy plots submitted by the experimenter. Each frame contains 70 min of data. Given are 30-s averaged values of magnetic field magnitude, with standard deviations, and field vector polar and azimuthal angles in solar ecliptic

coordinates.

PIONEER 9, WEBBER
COSMIC-RAY GRADIENT

Data set name - PROTON COUNT RATES PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA'

NSSDC ID 68-100A-06A, SGD PBLSHD PROTON COUNT RATES

Time period covered - 12/01/69 TO 08/18/74
(As verified by NSSDC)

Quantity of data - 49 BOOKS OR BOUND VOLUMES

This data set consists of monthly tabular listings of count rates of protons with energies above 13.9 and 40 MeV. Typically, one or two count rates per energy channel per day were given in the early life of the spacecraft. By late 1971, only a few count rates per month were given. Data obtained during a given month were published in "Solar-Geophysical Data (Prompt Reports)" with a 1-month lag.

Data set name - DAILY AVERAGED COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 68-100A-06B, PION 9,DAILY AVG RATE M/F LISTING

Time period covered - 11/08/68 TO 09/04/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm generated at NSSDC from experimenter-supplied computer printout. Daily averaged count rates and standard errors (less than 1% of count rate), are listed for both Pioneers 8 and 9 for modes T1+2 and T5. Mode T1+2 corresponds to electrons above 8.4 MeV and nuclei above 64 MeV/n on Pioneer 8 and to electrons above 5.1 MeV and nuclei above 42 MeV/n on Pioneer 9. Mode T5 corresponds to electrons above 0.6 MeV and nuclei above 14 MeV/n on Pioneers 8 and 9. Data gaps near the end of the time period covered reflect decreasing spacecraft tracking.

Data set name - DAILY AVERAGED COUNT RATE PLOTS ON MICROFILM

NSSDC ID 68-100A-06C, DAILY AVGD RATES,MFILM PLOTS

Time period covered - 11/08/68 TO 09/04/71
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 35-mm microfilm generated at NSSDC from experimenter-supplied hardcopy plots. Daily averaged count rates for modes T1+2 and T5 are plotted with 1 year of data per frame. Pioneer 8 and 9 data frames are interspersed. For each spacecraft, mode, and year, there are two plots. One of these has a linear count-rate scale and the other has a logarithmic count-rate scale. Data gaps which reflect the lack of spacecraft tracking become increasingly abundant near the end of the time period of coverage.

PIONEER 9, WOLFE
SOLAR PLASMA DETECTOR

Data set name - ANALYZED PLASMA PARAMETERS ON MICROFILM

NSSDC ID 68-100A-02A, PLASMA PARAMETERS

Time period covered - 11/08/68 TO 08/18/74
(As verified by NSSDC)

Quantity of data - 16 REELS OF MICROFILM

These analyzed data were supplied by the experimenter and consist of time-ordered plots of the following solar wind parameters: (1) proton number density (protons/cu cm), (2) azimuth (solar ecliptic longitude) of the peak particle flux for ions (deg), (3) bulk velocity (km/s), (4) polar angle (solar ecliptic latitude) of the peak particle flux (deg), (5) proton temperature and helium temperature (deg), (6) helium/hydrogen ratio (number of helium ions/cu cm/number of protons/cu cm), (7) electron temperature (deg K), and (8) two indicators of the anisotropy in the solar plasma ion temperature distribution.

********** PIONEER 10 **********

Data set name - PRELIMINARY TRAJECTORY CHART ON HARDCOPY

NSSDC ID 72-012A-00D, PRELIMINARY TRAJ. CHART

Time period covered - 03/03/72 TO 05/00/74
(As verified by NSSDC)

Quantity of data - 1 PAGE OF UNBOUND HARDCOPY

This data set consists of two sets of charts of preliminary trajectories provided by JPL. One set of charts is for the spacecraft Pioneer E (launched August 27, 1969, but failed to attain orbit), Pioneer F (Pioneer 10, 72-012A), and Pioneer G (Pioneer 11, 73-019A). This set can be used to determine the position of the spacecraft with respect to the earth-sun line at various times into the missions. A user can also determine the estimated telemetry bit rate that will be used as a function of position of the spacecraft with respect to the sun, and as a function of the various communication antennas available to receive the data. The reverse side of the chart contains similar information for Mariner 71 (Mariner 9, 71-051A), Mariner J (Mariner 10, launched in 1973), Helios (launched in 1974), and Pioneer 9 (69-100A) superimposed on the Pioneer E, 10, and 11 trajectories. The second set of charts is similar to the first but contains Mariner 9, Pioneer 10, Pioneer 11, Mariner 10, and Helios A on one side, and Pioneer 10 and Pioneer 11 on the other side. Both sets of charts can be used to determine the direct line-of-sight viewing period.

PIONEER 10, ANDERSON
CELESTIAL MECHANICS

Data set name - DOPPLER TRACKING DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-09A, DOPPLER TRACKING DATA ON MAG TAPE

Time period covered - 10/05/73 TO 12/28/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set is contained on magnetic tape (7-track, 800-bpi, 32-bit-word length). The data include (a) the time of observation (in seconds since January 1, 1950, at zero hours, zero minutes, zero seconds), (b) the Doppler compression time (in hundredths of a second) or ranging components for range data, (c) the radio band indicator, (d) a tracking network indicator, (e) a transmitting station number, (f) a receiving station number, and (g) a data type indicator (e.g., one-way Doppler, two-way Doppler, etc.).

Data set name - DOPPLER TRACKING,DURING SOLAR OPPOSITION, DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-09B, DOPPLER TRKING / SOLAR OPPOSITION

Time period covered - 11/13/81 TO 12/09/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Doppler tracking/solar opposition data are on 9-track, 6250-bpi, binary magnetic tape created on a UNIVAC 1100/81 computer. Each logical record contains 5 double precision (72-bit) floating point words consisting of time in seconds since January 1, 1950, station number, tracking mode, Doppler cycle count, and pseudo-residuals. These data are written in 36-sector blocks of 100 points each (500 double precision words and 4 null words at the end of each block).

PIONEER 10, BARNES
QUADRISPHERICAL PLASMA ANALYZER

Data set name - MICROFILM PLOTS OF SOLAR WIND BULK SPEED VERSUS TIME

NSSDC ID 72-012A-13A, PLOTS OF BULK SPEED VS TIME-FILM

Time period covered - 04/18/72 TO 12/12/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This experimenter-generated 35-mm microfilm contains plots of bulk speeds vs time, with one data point per hour (with the point taken from any time during each hour) and with about 14 days of data in each plot. Data were calculated from

least squares fits to the entire spectrum of a convected isotropic Maxwellian distribution function. Bad data have been removed. The experimenters believe these speeds are accurate to within 1%. A description of the fitting procedure may be found in Mihalov and Wolfe, Cosmic Electrodynamics, v. 2, n. 3, p. 326, October 1971.

Data set name - SOLAR WIND PROTON BULK SPEED DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-13B, SOLAR WIND PROTON BULK SPEED DATA

Time period covered - 04/18/72 TO 12/31/79
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

These experimenter-supplied, solar wind proton bulk speed data are on 9-track, 800-bpi, binary magnetic tape created on an IBM 360 computer. The unblocked, 32-byte records contain two 360 control words; year; day of year; milliseconds of day; chi-square; error with free proton bulk velocity (km/s); and free proton bulk velocity (km/s). Time parameters and control words are in integer format. The remaining words are in floating-point representation.

Data set name - FULL HISTORY, SOLAR WIND PROTON, PLASMA DATA ON MAGNETIC TAPE. (*)

NSSDC ID 72-012A-13C, FULL HISTORY, SOLAR WIND PROTONS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied data are written as file 1 on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. They consist of the following time-ordered solar wind parameters for protons: the number density (#/cc), temperature (deg K), bulk speed (km/s), flow azimuth, and flow elevation (deg). The parameters were derived by least-square fitting a convected isotropic maxwellian distribution function to the raw data; the bulk velocity was transformed to inertial coordinates centered on the spacecraft, with the Z axis toward the north ecliptic pole and the X axis in the Z sun plane. Estimated errors are 12% for density, 20% for temperature, 20 km/s for speed, and 1 deg for angles. All analyzed fits are included in this data set, with bad and questionable fits flagged. (During the period April 1972 to December 1977, only one sample per hour was fitted, except during the Jupiter encounter of December 1973. There were up to 5 samples taken per hour.) In addition to the five parameters, each data record contains the uncertainties of each parameter, the chi-square of the fit, and trajectory parameters (heliocentric ecliptic). Microfiche plots of the parameters and related functions are available at NSSDC as 72-012A-13F and G.

Data set name - HOURLY AVERAGED SOLAR WIND PROTON PLASMA DATA AND MOMENTS ON MAGNETIC TAPE. (*)

NSSDC ID 72-012A-13D, HR AVG SOLAR WIND PROTONS+MOMENTS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set is written as file 2 on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. It consists of time-ordered hourly averages of the five solar wind plasma parameters and related functions. The parameters are density (protons/cc), temperature (deg K), bulk speed (km/s), and the two flow angles (deg). The functions are the momentum flux, convective pressure, thermal pressure, and energy density. Also included is the rms dispersion in each parameter average. The averages are generated from the full data set, 72-012A-13C.

Data set name - DAILY AVERAGED SOLAR WIND PROTON PLASMA DATA AND MOMENTS ON MAGNETIC TAPE. (*)

NSSDC ID 72-012A-13E, DAILY AVG SOL WIND PROTON+MOMENTS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set is written as file 3 on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. It consists of time-ordered hourly averages of the five solar wind plasma parameters and related functions. The parameters are density (protons/cc), temperature (deg K), bulk speed (km/s), and the two flow angles (deg). The functions are the momentum flux, convective pressure, thermal pressure, and energy density. Also included is the rms dispersion in each parameter average. The averages are generated from the full data set, 72-012A-13C. Microfiche listings of the daily averages are also available at NSSDC as 72-012A-13H.

Data set name - FULL HISTORY SOLAR WIND PROTON PLOTS ON MICROFICHE (*)

NSSDC ID 72-012A-13F, FULL HISTORY SOL WIND PROT PLOTS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 7 CARDS OF B/W MICROFICHE

These experimenter-generated microfiche plots present the time history of the proton plasma parameters and some related functions obtained from the data set available on tape at NSSDC as 72-012A-13C. Bad fits have been omitted. There are three frames for each 40-day interval containing temperature, density, bulk speed, momentum flux, convective pressure, thermal pressure, energy density, flow azimuth, flow elevation, and the chi-square of the fit. (The temperature, density, and speed plots are excerpted as 72-012A-13G.)

Data set name - 54-DAY SOLAR WIND PROTON T,N,V PLOTS ON MICROFICHE. (*)

NSSDC ID 72-012A-13G, 54 DAY S W PROTON T,N,V PLOTS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

These experimenter-generated microfiche plots present the time history of the proton plasma parameters obtained from the data set available on tape at NSSDC as 72-012A-13C. Bad fits have been omitted. Proton temperature, density, and bulk speed are plotted for each 54-day interval. (Data set 72-012A-13F contains plots of functions of these parameters as well.)

Data set name - LISTING OF DAILY AVERAGES SOLAR WIND PROTONS AND MOMENTS ON MICROFICHE (*)

NSSDC ID 72-012A-13H, LIST DAY AVG S W PROTON+MOMENTS

Time period covered - 04/18/72 TO 06/25/83
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This experimenter-generated microfiche lists the daily averages of the solar wind plasma proton parameters and related functions (available on tape at NSSDC as 72-012A-13E). Listed are the temperature, density, bulk speed, momentum flux, thermal pressure, convective pressure, energy density, flow angles, and the heliocentric ecliptic distance, longitude, latitude, and solar latitude of the spacecraft.

PIONEER 10, FILLIUS
JOVIAN TRAPPED RADIATION

Data set name - DECEMBER 1973 JUPITER ENCOUNTER DATA SUMMARY TAPES

NSSDC ID 72-012A-05A, ENCOUNTER DATA SUMMARY TAPES

Time period covered - 11/25/73 TO 12/19/73
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These experimenter-supplied summary data on 556-bpi, 7-track, binary, magnetic tape were created on a CDC 3600 computer from raw data tapes using a reduction program. Each 300-word (48-bit words) record contains one complete data summary (108 s each), along with associated information including satellite number; mode of reduction; time and data; bit rates; and pulse, electrometer, and trajectory data for Jupiter encounter.

Data set name - DECEMBER 1973 JUPITER ENCOUNTER DATA ANALYSIS TAPE

NSSDC ID 72-012A-05B, ENCOUNTER DATA ANALYSIS TAPE

Time period covered - 12/04/73 TO 12/05/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, on 556-bpi, 7-track, BCD magnetic tape, were created on a CDC 3600 computer from raw data tapes using a reduction program. These experimenter-supplied analysis tapes include 120 characters per logical record and one logical record per physical record. The data consist of detector ID (channel used), time in day and fraction of day, average counting rate, coefficients of sin and cos for the first through the fourth harmonics, rms error, number of data points and communication cycles per fit, and full width of triangular weight function in days.

Data set name - INTERPLANETARY DATA SUMMARY TAPE

NSSDC ID 72-012A-05C, INTERPLANETARY DATA SUMMARY TAPES

Time period covered - 03/03/72 TO 05/30/77
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

These summary data are on 556-bpi, 7-track, binary magnetic tape created on a CDC 3600 computer from raw data tapes using a reduction program. Each 300-word (48-bit words) record contains one complete data summary (108 s each), along with associated information, including satellite number; mode of reduction (earth traversal, cruise or Jupiter encounter); time and data; bit rates; and pulse, electrometer, and trajectory data for the cruise mode.

Data set name - INHOMOGENEOUS DAILY SUMMARY DATA AT VARIOUS BIT RATES ON MAGNETIC TAPE

NSSDC ID 72-012A-05D, INHOMOGENEOUS DAILY SUM INTERPLNT

Time period covered - 03/03/72 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, inhomogeneous daily summary interplanetary data are on 7-track, 800-bpi, binary magnetic tape created on a CDC 3600 computer. Each 300-word record contains one complete data summary and consists of satellite number; mode of reduction; start and stop time of summary in Cole time (ms); day of year and year; EDR tape name; binary reduction tape name; data format; bit rate; roundtrip light time (ms); minimum, maximum, and average pulse temperature and high voltage regulator current and detector C temperature; pulse data consisting of average number of counts per reading, RMS deviation, max. and min. residue, number of readings, total counts, total time (in seconds), average number of counts/seconds, and probable error; electrometer data consisting of av. reading, RMS deviation, max. and min. residue, max. and min., av. current, and no. of readings; and 41 words of ephemeris information for one of three modes: earth traversal, cruise, or Jupiter encounter.

Data set name - INTERPLANETARY DATA PLOTS ON MICROFILM

NSSDC ID 72-012A-05E, INTERPLANETARY DATA PLOTS,MFILM

Time period covered - 01/01/72 TO 02/09/82
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of plots of trapped particle count rates vs time from three channels on each of the C, M, and E detectors on the Trapped Radiation Experiment for the interplanetary medium. The data for Pioneer 11 (73-019A-05F) are also contained on this roll.

Data set name - 24-HOUR COMPRESSED SUMMARY DATA ON MAGNETIC TAPE (*)

NSSDC ID 72-012A-05F, 24-HOUR COMPRESSED SUMMARY DATA

Time period covered - 02/01/72 TO 12/31/83
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These experimenter-supplied, 24-hour compressed summary data are on 9-track, 1600-bpi, binary magnetic tape created on a VAX 11/780 computer. Each 300-word record contains one complete summary, along with associated information consisting of satellite number; mode of reduction; start and stop time of summary (Cole time); year, and day of year; tape ID; data, and bit rate flags; round trip light time (ms); minimum, maximum, and average pulse temperature, high voltage regulator current, and detector C temperature; average pulse counts per reading; RMS deviation; number of readings; total pulse data; total time (seconds); average number of counts/s; average electromagnetic reading; maximum and minimum residue; average, max., and min. current; number of readings; and trajectory data for earth traversal, cruise, and Jupiter encounter modes.

PIONEER 10, GEHRELS
IMAGING PHOTOPOLARIMETER (IPP)

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 72-012A-07A, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 11/01/73 TO 12/15/73
(Date supplied by experimenter)

Quantity of data - 25 COLOR POSITIVE FRAMES

This data set contains those photographs of Pioneer 10 which have been released to the press. The pictures are of interesting features, such as the Great Red Spot, the Little Red Spot, and the north tropical zone. Also included are pictures of Jupiter with 90% of the disk visible and the moons named Io, Europa, and Ganymede.

Data set name - POLARIZATION DATA FROM PIONEER 10 FOR JUPITER ON MICROFICHE

NSSDC ID 72-012A-07B, POLARIZATION DATA ON MICROFICHE

Time period covered - 04/26/72 TO 07/20/75
(As verified by NSSDC)

Quantity of data - 185 CARDS OF B/W MICROFICHE

This data set on microfiche contains polarization data of Jupiter from the photopolarimeter obtained from the Pioneer 10 mission. The data are in tabular form and contain the following information: (1) sector number, (2) number of rolls, (3) polarization values, (4) standard deviation, and (5) maximum and minimum values. The heading of each card indicates which aperture was used. The first card contains computer program information such as commands, address, length, file, and miscellaneous information.

Data set name - BLACK AND WHITE PHOTOGRAPHY

NSSDC ID 72-012A-07C, BLACK AND WHITE PHOTOGRAPHY

Time period covered - 12/02/73 TO 12/05/73
(As verified by NSSDC)

Quantity of data - 165 B/W NEGATIVE FRAMES

This data set consists of B/W negatives of Pioneer 10 images obtained from the Imaging Photopolarimeter experiment (IPP). When the negatives are viewed with the caption at the bottom, north is up and the rising limb is on the left. The images are displayed at a constant scale of 0.8 mm/s/c roll (scan by IPP). There are two images, one red and one blue for each frame number. The numbering system proceeds from high numbers and decreases until closest approach (designated A) such that number 1 is at periapsis. The numbers then increase on the outgoing trajectory and are designated B. For example, image A 104R was obtained by exposure of film through a red filter while the spacecraft was approaching Jupiter but still distant from the planet. There is a corresponding frame in the blue (B). Since the numbers were assigned before image display, there are some numbers for which no good data images exist. The images are displayed with only a one-dimensional rectification, so there is some distortion present. The quality of detail of the images ranges from poor to good.

Data set name - BLACK AND WHITE PHOTOGRAPHY

NSSDC ID 72-012A-07D, B/W 8X10 PHOTOGRAPHY

Time period covered - 12/02/73 TO 12/05/73
(As verified by NSSDC)

Quantity of data - 52 B/W NEGATIVE FRAMES

This data set consists of B/W negatives of Pioneer 10 images obtained from the Imaging Photopolarimeter experiment (IPP). When viewed with the caption at the bottom, north is up and the rising limb is on the left. The images are displayed at a constant scale of 0.8 mm/s/c roll (scan by IPP). There are

two images, one red and one blue for each frame number. The numbering system proceeds from high numbers and decreases until closest approach (designated A) such that number 1 is at periapsis. The numbers then increase on the outgoing trajectory and are designated B. For example, image A 104R was obtained by exposure of film through a red filter while the spacecraft was approaching Jupiter but still distant from the planet. There is a corresponding frame in the blue (B). Since the numbers were assigned before image display, there are some numbers for which no good data images exist. The images are displayed with only a one-dimensional rectification, so there is some distortion present. The quality of detail of the images ranges from poor to good.

Data set name - INDEXES TO PIONEER 10 IMAGE PHOTOPOLARIMETER PHOTOS ON FICHE

NSSDC ID 72-012A-07E, INDEXES OF DATA

Time period covered - 01/26/73 TO 02/15/73
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set is the index for the images from the Imaging Photopolarimeter experiment (IPP) on Pioneer 10. The index is sequential, and the columns in the index are as follows: (1) month and day, (2) frame number (with filter designation following), (3) date and time in UT, designated as day of year, hour and minute, (4) range in kilometers from spacecraft to center of Jupiter, (5) fixed size (one picture element in kilometers projected on the planet), (6) phase angle (degree), (7) latitude (at subspacecraft), (8) longitude (in system I), and (9) longitude (in system II).

Data set name - IMAGING PHOTOPOLARIMETER POLARIZATION DATA ON MAG TAPE

NSSDC ID 72-012A-07F, POLARIZATION DATA ON TAPE

Time period covered - 04/26/72 TO 07/20/75
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

This data set is polarization data from the Imaging Photopolarimeter experiment (IPP) on the Pioneer 10 and 11 missions. The data are on 7-track, 556-bpi, HCD, unblocked with variable length, magnetic tapes. A copy of the CDC 6400 program COPTAV, used to generate these tapes, accompanies them. Tables 1 and 2 provide lists of Pioneer 10 and 11 observations (day/yr), the number of 4-roll data sets (each set of which may yield a polarization solution), and the number of sectors/roll (SECT). Each sector consists of four words (channels BP, BS, RP, RS). These tables also list the tape files and object observed for each day. The record length varies as 4* SECT. Each observing day consists of two files: (1) the header record (similar to that found on the Experimenter Data Record, EDR) with indication whether original EDR data have been edited or not ("Edited PLUM Run" or "PLUM Run," respectively) prior to being averaged by the program PLUM and (2) the data file consisting of 2-record sets, the spacecraft altitudes (A-B4) in the first record, spacecraft (EDR) housekeeping, and the data (C-M subscript 56) in the second record. The second record length may vary from day to day as a function of 4* SECT (Table 1). Each dual record set pertains to data averaged over a single aperture (word 81 of the housekeeping data). A polarimetric solution is computed from an 8-record set with records 2, 4, 6, and 8 containing data for apertures 0.5 mr, lambda/2, dp, and 8 mr (4, 5, 6, 4, respectively). Table 3 equates parameters A-M found in COPTAV with the conventional names or mnemonics given in Pioneer documentation. These tapes contain the same information as the PLUM microfiche data sets (72-012A-07B and 73-019A-07B), except they do not contain the standard deviations for intensities included in the PLUM microfiche. It is recommended that the PLUM microfiche be used if possible.

Data set name - JUPITER IMAGE LOG ON MICROFICHE

NSSDC ID 72-012A-07G, JUPITER IMAGE LOG ON MICROFICHE

Time period covered - 11/25/73 TO 12/15/73
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of a log of the images of Jupiter made by the missions of Pioneers 10 and 11. Images are identified by a series letter and a sequence number. The letter identifies the spacecraft: A and B are for Pioneer 10, and C and D are for Pioneer 11. A indicates images taken prior to pericenter, and the numbers decrease monotonically; B denotes images taken after pericenter, and the numbers increase monotonically. Likewise for Pioneer 11, C denotes ante-pericenter images, and D denotes post pericenter. Other parameters are also listed giving earth transmit time, earth receipt time, stretch factor, telescope motion, range to Jupiter, phase angle, longitude of central meridian on system II, pixel size, zenocentric latitude, cone angle, and clock angle.

Data set name - COLOR PHOTOGRAPHY

NSSDC ID 72-012A-07H, COLOR PHOTOGRAPHY

Time period covered - 12/01/73 TO 12/05/73
(As verified by NSSDC)

Quantity of data - 40 COLOR NEGATIVE FRAMES

This data set, supplied by the investigator, consists of color negatives from Pioneer 10 obtained by the Imaging Photopolarimeter experiment (IPP). The imaging photopolarimeter gathered data using the red and blue components of the light reflected from Jupiter. Reconstructing images by using the red and blue produced a purple image; however, it was possible to synthesize a green image so that when all the images were composited, an adequate color image was produced.

Data set name - INDEX OF JUPITER IMAGES

NSSDC ID 72-012A-07J, INDEX OF JUPITER IMAGES

Time period covered - (N/A)

Quantity of data - 5 PAGES OF UNBOUND HARDCOPY

This data set consists of the index of the photos obtained on the Pioneer 10 flyby of Jupiter on December 3, 1973, from the Imaging Photopolarimeter. The parameters provided are (1) the imaging sequence number, (2) mid-time of the exposure, (3) range of the spacecraft from the planet, (4) pixel size of the footprint on the planet's surface from which resolution can be derived, (5) phase angle, (6) latitude, and (7) longitude of the center of the disk in systems I and II. The numbering is decreasing until closest approach and preceded by the letter A. After closest approach, the numbers increase and are preceded by the letter B. Therefore, A numbers indicate approaching photos and B numbers denote receding photos.

PIONEER 10, JUDGE
ULTRAVIOLET PHOTOMETRY

Data set name - EUV EDR PHOTON EMISSION DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-06A, EUV EDR PHOTON EMISSION DATA

Time period covered - 03/11/72 TO 05/30/81
(As verified by NSSDC)

Quantity of data - 38 REELS OF TAPE

These experimenter-supplied, Ultraviolet Photometer data are on 9-track, 6250-bpi, binary magnetic tapes created on an IBM 360 computer. Each tape contains a varying number of days' worth of data. Data from each day consist of four data files called an Experimenter Data Record (EDR). Each EDR consists of (1) a logistics file containing spacecraft and tape identification information; (2) a command file containing day of year and time of day of command verification, command mnemonic (instrument on, instrument off, and remove cover), and command status; (3) a spacecraft attitude file containing elapsed days since start of year, elapsed time in milliseconds (ms) since start of day, ecliptic latitude and longitude of spin axis, and clock angle of sun (Helios) and star (Canopus) in degrees; and (4) an experiment data file containing elapsed time in day of year and milliseconds (ms) of day, time correction flag, reference select status (clock angle determination), signal noise, Deep Space Station number, bit rate, mode (real time, telemetry store or memory readout), round trip light time (ms), extended frame counter, star delay time, roll attitude timer, spin period, roll pulse and roll-index pulse phase error measurement, time-of-roll attitude timer, dc bus voltage and current, power status, platform temperature, and a data word containing subcommutated engineering data (when related to the ultraviolet photometer) and two mainframe words.

Data set name - USC ULTRAVIOLET DATA PLOTS

NSSDC ID 72-012A-06B, USC ULTRAVIOLET DATA PLOTS

Time period covered - 03/30/72 TO 09/25/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, submitted by the principal investigator in hardcopy form was microfilmed by NSSDC and is available in that format. It contains both Pioneers 10 and 11 data on the same roll. The plots give time-averaged counting rate vs clock-angle for the two-channeled photometer. The title contains the Pss Pass (pss pppp ddd mmm dd yyyy), where pss = 10 for Pioneer 10, pss = 11 for Pioneer 11, pppp = pass number or number of days since launch, ddd = day of year, mmm = month, dd = date, and yyyy = year. The Y axis represents the average count rate in counts per second, while the X axis gives the clock-angle in degrees. At the bottom of the plot are listed the following chan: H-hydrogen or lambda L, He or lambda S, the channel of the instrument; interval times: time period for which the average is taken given in hours, minutes, and seconds, where Min, Avg, Max = values for corresponding count rate given in counts per second: Min, Clock, Max = clock-angle, where (minimum/maximum) count rate occurs; and # OBS = number of observations made by the instrument.

PIONEER 10, KINARD
METEOROID DETECTORS

Data set name - METEOROID ENVIRONMENT DATA FOR JUPITER

NSSDC ID 72-012A-04A, METEOROID ENVIRONMENT DATA/JUP

Time period covered - (N/A)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of published documents by the principal investigator and co-investigators on the Meteoroid Detector Experiment on Pioneers 10 and 11 at Jupiter and Saturn and constitutes the only data to be deposited at NSSDC. There are five papers, (1) Humes, D. H., et al., "Cosmic Dust Encountered by Pioneers 10 and 11"--a paper presented at the 1973 AGU meeting; (2) Kinard, W. H., et al., "Interplanetary and Near-Jupiter Meteoroid Environments: Preliminary Results from the Meteoroid Detection Experiment"; Science, v. 183, n. 4122, pp. 321-2, 1974; (3) Humes, D. H., et al., "The Interplanetary and Near-Jupiter Meteoroid Environments," J. Geophys. Res., v. 79, n. 25, 1974; (4) Humes, D. H., et al., "Pioneer 11 Meteoroid Detection Experiment: Preliminary Results," Science, v. 188, n. 4187, pp. 473-4, 1975; and (5) Humes, D. H., "The Jovian Meteoroid Environment", in Jupiter, edited by T. Gehrels and M. S. Matthews, U. of Arizona Press, Tucson, Arizona, 1976, pp. 1052-67. In these documents data that are presented are plots of (1) cells penetrated vs time from launch for various thicknesses of cells, (2) penetration flux vs distance from sun for Explorer 23 and Pioneer 10, (3) spatial density vs sun distance for assumed circular and elliptical orbits for Pioneer 10 data, (4) number of cells punctured vs time after instrument turned on for Pioneer 10, (5) interval between penetrations vs time from periapsis for Pioneer 10, (6) distance from Jupiter vs time to periapsis for Pioneer 10, (7) penetration flux vs distance from Jupiter for Pioneer 10, (8) average impact speed vs distance from Jupiter for Pioneer 10, (9) ratio of effective area to actual area vs Jupiter distance for Pioneer 10, (10) spatial density vs Jupiter distance, (11) log cumulative spatial density vs log mass at 5 AU from channel 0 for Pioneers 10 and 11, (12) calculated log cumulation flux vs log mass into Jovian atmosphere, and (13) pressure vs meteoroid mass. These documents have been microfilmed onto one roll and are available in that format from NSSDC.

PIONEER 10, KLIORE
S-BAND OCCULTATION

Data set name - FINAL PLOTS AND LISTINGS OF JUPITER OCCULTATION DATA, ON MICROFILM

NSSDC ID 72-012A-10A, JUP.OCCULT - FINAL PLTS/LSTS MFLM

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained on 16-mm microfilm and consists of listings of the outputs of the intermediate and final programs used to analyze Pioneer 10 data resulting from occultations of Jupiter. These data include the derived atmospheric parameters (e.g., temperature, pressure, lapse rate) that appear nowhere else. Other outputs, resulting from intermediate programs, are also listed. These data were received from the principal investigator. Included on this microfilm are data from the Pioneer 11 occultation of Jupiter.

Data set name - FINAL PLOTS AND LISTINGS OF IO OCCULTATION DATA, ON MICROFILM

NSSDC ID 72-012A-10B, IO OCCULT - FINAL PLTS/LISTS MFLM

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained on 16-mm microfilm and consists of listings of the outputs of the intermediate and final programs used to analyze Pioneer 10 data resulting from occultations of Io. These data include the derived atmospheric parameters (e.g., temperature, pressure, lapse rate) that appear nowhere else. Other outputs, resulting from intermediate programs, are also listed. These data were received from the principal investigator. Included on this microfilm are data from the Mariner 10 occultation of Venus (data set 73-085A-02A).

Data set name - INTERMEDIATE DATA FILES OF IO OCCULTATION DATA, ON MAGNETIC TAPE

NSSDC ID 72-012A-10C, IO OCCULT -- INTERMED.DATA, TAPE

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was generated by the principal investigator using the Pioneer 10 radio occultation data for Io as input to a subset of the occultation software. The software removed drift and bias from frequency residuals, computed bending angle, ray-asymptote distance, power corrections, and refractivity as a function of radius to the center of the planet Jupiter. This data set is contained on one 7-track, 800-bpi, binary magnetic tape generated on a UNIVAC 1108 computer.

Data set name - REDUCED TELEMETRY SIGNAL DATA FOR IO OCCULTATION DATA, ON MAGNETIC TAPE

NSSDC ID 72-012A-10D, IO OCCULT -- RED.TM SIGNALS, TAPE

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set is contained on two magnetic tapes supplied by the principal investigator. These tapes are 9-track, 800-bpi, odd-parity tapes generated on a UNIVAC 1108 computer. These tapes were prepared by sampling the analog spacecraft signal and time from analog-recorded tapes. The sample rate is 80,000 samples/s for both S-band and X-band. The data on the tapes are a digital representation of recorded signals received from the spacecraft, the time of reception (UTC), and header information. These magnetic tapes contain only the data from the Io occultation.

Data set name - INTERMEDIATE DATA FILES OF JUPITER OCCULTATION DATA, ON MAGNETIC TAPE

NSSDC ID 72-012A-10E, JUP.OCCULT -- INTERMED.DATA, TAPE

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was generated by the principal investigator using the Pioneer 10 Jovian radio occultation data as input to a subset of the occultation software. The software removed drift and bias from frequency residuals, computed bending angle, ray-asymptote distance, power corrections, and refractivity as a function of radius to the center of the planet Jupiter. The data set is contained on one 7-track, 800-bpi, binary tape magnetic tape generated on a UNIVAC 1108 computer.

Data set name - REDUCED TELEMETRY SIGNAL DATA FOR JUPITER OCCULTATION, ON MAGNETIC TAPE

NSSDC ID 72-012A-10F, JUP.OCCULT - RED.TM SIGNALS, TAPE

Time period covered - 12/04/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set is contained on two magnetic tapes supplied

by the principal investigator. These tapes are 9-track, 800-bpi, odd-parity, BCD tapes generated on a UNIVAC 1108 computer. They were prepared by sampling the analog spacecraft signal and time from analog-recorded tapes. The sample rate is 80,000 samples/s for both S-band and X-band. The data on the tapes are a digital representation of recorded signals received from the spacecraft, the time of reception (UTC), and header information. These magnetic tapes contain only the data from the Jupiter occultation.

PIONEER 10, MCDONALD
COSMIC-RAY SPECTRA

Data set name - 15-MIN AVERAGED JUPITER ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-12A, 15-MIN AVERAGED JUPITER ENCOUNTER

Time period covered - 11/26/73 TO 12/15/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 15-min averaged Jupiter encounter data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. Each variable length logical record contains number of data items in the record; number of averaging intervals in the records; 132-character title identifying the satellite and giving the start time of the first and last averaging interval in the record; 132-character descriptions of a variable number of data items; and a variable number of averaging interval entries consisting of time in year, month, day, hour, minute, and seconds, and a 2-word flux entry containing a flux value and associated statistical error.

Data set name - 6 HOUR AVERAGED INTERPLANETARY DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-12B, 6-HR AVERAGED INTERPLANETARY DATA

Time period covered - 03/06/72 TO 12/31/85
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 6-h averaged interplanetary data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. Each variable length logical record contains number of data items in the record; number of averaging intervals in the records; 132-character title identifying the satellite and giving the start time of the first and last averaging interval in the record; 132-character descriptions of a variable number of data items; a variable number of averaging interval entries consisting of time of year, month, day, hour, minute, and seconds; and a 2-word flux entry containing a flux value and associated statistical error.

PIONEER 10, SIMPSON
CHARGED PARTICLE COMPOSITION

Data set name - COUNT RATE PLOTS BY SOLAR ROTATION ON MICROFILM

NSSDC ID 72-012A-02A, SOLROT COUNT RATE PLOTS, MFILM

Time period covered - 03/03/72 TO 01/14/74
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of coincidence-mode, count-rate plots on microfilm. Each plot covers a 28-day interval beginning each 27-day solar rotation. The data begin in solar rotation 1895 on March 3, 1972. For each rotation 13 count rates and 2 temperature readings are presented. Rates from the main telescope, the low-energy subsystem telescope, the electron current detector, and the fission cell detector are included. Individual data points represent 15- or 60-min averages, depending on the mode.

Data set name - PULSE HEIGHT ANALYSIS DATA, 15-MIN ACCUMULATIONS ON TAPE (*)

NSSDC ID 72-012A-02B, PULSE HEIGHT ANALYSIS DATA, TAPES

Time period covered - 03/03/72 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 57 REELS OF TAPE

This data set consists of 7-track, binary, 800-bpi tapes produced by the experimenter on an XDS-930 computer. The data include coincidence-mode count rates together with 128-channel pulse heights of the three pulse-height analyzed elements (D1, D2, and D5) of the seven-element detector telescope, accumulated during 15-minute periods of real time. Data for each 15-min period are organized into a variable number of variable-length physical records, the first of which is a 120-word (24-bit words) header record containing the time, count rates, spacecraft attitude angles, and housekeeping data. Subsequent records contain triads of PHA measurements occurring within the 15-min period. No ephemeris data are included on the tapes.

Data set name - 5-MIN ACCUMULATED SECTORED COUNTING-RATE SUMMARY TAPES (*)

NSSDC ID 72-012A-02C, 5-MIN AVG. COUNT RATE TAPES

Time period covered - 03/03/72 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 24 REELS OF TAPE

This data set is contained on 7-track, binary magnetic tapes written at 800-bpi with an XDS 930 computer. The data are grouped into physical records of 960 24-bit words. Each physical record contains six 160-word logical records. Each logical record contains all experiment-mode count-rate data accumulated over a nominal period of 5 minutes. Information on particle arrival directions is provided by count rates recorded in each of the eight octants (sectors) about the spacecraft spin axis for the main and low-energy telescopes. No ephemeris data are included on the tapes.

PIONEER 10, SMITH
MAGNETIC FIELDS

Data set name - ONE MIN AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MFILM FOR JUPITER ENCOUNTER

NSSDC ID 72-012A-01D, ENCOUNTER 1 MIN AV DATA PLOTS,FLM

Time period covered - 11/25/73 TO 12/15/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

The 1-min averaged data are plotted for 3-h intervals. The colatitude, longitude, and total value of the field in nT are plotted on each frame in the S, J coordinate system. Following each 7 days of this format, there are 1-h averaged angles and magnitudes plotted for a 7-day interval. Several 7-day frames are used to change the value of B scale, which is a linear one. The S, J coordinate system is spacecraft-centered with the positive X axis formed by the spacecraft-sun line. The X-Z plane contains the rotation axis of the planet, and the Y axis completes the right-handed system. This system is defined on page 812 of the book, Jupiter, edited by T. Gehrels, U. of Arizona Press, 1976.

Data set name - ONE MINUTE, HOURLY, DAILY AVERAGES DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-01E, 1 MIN, HOURLY, DAILY AVG. CRUISE

Time period covered - 02/27/72 TO 11/17/75
(As verified by NSSDC)

Quantity of data - 49 REELS OF TAPE

The vector helium magnetometer 1-min average data set is on magnetic tape written at 800-bpi, 7-track, BCD, on an IBM 360 computer. Each tape contains an integral number of weeks of data (usually 4 or 5 weeks). Each day of data is contained on 50 physical blocks. The first logical record for a day is a 120-byte header containing year, day of year, spacecraft ID, distance of spacecraft and earth from sun, and heliocentric celestial latitude and longitude of spacecraft and earth. The next 1440 logical records contain minute averages. The next 24 logical records contain hour averages followed by one logical record of day averages.

Data set name - MINUTE AND HOURLY AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MICROFILM

NSSDC ID 72-012A-01F, 1 MIN AVGD VR MAG FIELD DATA,FILM

Time period covered - 09/03/72 TO 09/30/72
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

The 1-min averaged data are plotted for 3-h intervals. The colatitude, longitude, and total value of the field in nT are plotted on each frame in the S, H coordinate system.

Following each seven days of this format, there is a 7-day interval in which 1-h averaged angles and magnitude are plotted. The S, H coordinate system, known as the solar interplanetary system, is defined in Smith et al., J. Geophys. Res., v. 82, p. 1077, 1977. It is spacecraft-centered with the positive X axis formed by the sun-spacecraft line. The X-Z plane contains the rotation axis of the sun, and the Y axis completes the right-handed system.

Data set name - JUPITER ENCOUNTER INSIDE 7 RJ, JG
COORDINATES DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-01G, JUPITER ENC.TRAJ.INSIDE 7RJ JG CO

Time period covered - 12/03/73 TO 12/04/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer magnetometer data for Jupiter close encounters are written in two files on a 9-track, 1600-BPI, ASCII magnetic tape. The first file contains Pioneer 10 data inside seven Jupiter radii; the second file contains Pioneer 11 data inside seven Jupiter radii. A third file contains documentation describing the data. Each data record is 80-bytes long and contains the following: ground-received time in days (3.0= Dec. 3,00:00): distance of satellite from Jupiter (in Jupiter radii); latitude and longitude of satellite in the Jupiter-entered JG system; and 1-min average of X, Y, and Z components of field in JG. Zenographic (JG) coordinates are defined as follows: the X-axis is in the direction of G, the equatorial vector lying in the system III Prime Meridian 1957-0; the Z-axis is in the direction of J, the spin axis of Jupiter; and the Y-axis is parallel to Jupiter's equatorial plane and completes a right-handed orthogonal system.

PIONEER 10, SOBERMAN
ASTEROID/METEOROID ASTRONOMY

Data set name - REFORMATTED REDUCED DATA ON SKY/ASTEROID/
METEOROID LIGHT EMISSIONS ON MAG. TAPES

NSSDC ID 72-012A-03A, ASTEROID/METEOROID/SKY EMISSIONS

Time period covered - 03/09/72 TO 01/07/76
(As verified by NSSDC)

Quantity of data - 55 REELS OF TAPE

The Asteroid/Meteoroid Detector (AMD) data are on 556-bpi, 7-track magnetic tape recorded on an SDS 930 computer. In order to facilitate the analysis of the AMD data, the original Experimenter Data Record (EDR) tapes were reformatted, and several day's data were copied onto one reel of magnetic tape. This data set consists of these combined tapes. The data are mixed mode and each is multifiled. A data tape referred to as an (EDR) was received by the experimenter for each day of the mission of the spacecraft. Each EDR consists of four tape files. The first file is a level defining the time period covered by the EDR and giving other miscellaneous descriptive information. The second file contains a list of all commands sent to the spacecraft during the given day. These include commands to orient the spacecraft, turn instruments on and off, etc. The third file contains spacecraft attitude data for the preceding 31 days, including celestial latitude and longitude. These first three files are in BCD format. The fourth file is in binary format and contains the bulk of the AMD instrument data.

Data set name - FINAL REPORT OF DATA ANALYSIS

NSSDC ID 72-012A-03B, DATA ANALYSIS, FINAL REPORT

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set is the final report containing the data analysis of the Asteroid/Meteoroid Astronomy experiments carried in Pioneers 10 and 11. It discusses methods of reductions, descriptions of the instruments (telescopes), calibrations, assumptions, and results. Graphs and tables of counts of penetration, both total and in sectors of heliocentric distance are given. Plots of number vs particle size distributions are given. Appendix tables give the data measured by the Asteroid/Meteoroid Detector (AMD). Table C.1 gives event number, day of year, sector, bandwidth, entrance time (bits) and exit time (bits) for each of the four telescopes on Pioneer 10. Table C.2 gives backgrounds and peak signals for events measured by the AMD on Pioneer 10. Columns include event number, day of year, sector, bandwidth, background (bits) and peak signals (bits) for each of the four telescopes on Pioneer 10. Tables C.3 and C.4 give the same quantities for the Pioneer 11 telescopes as are in C.1 and C.2 respectively for Pioneer 10. Appendix E contains tables of particle concentrations in pre-asteroid belt region, and asteroid belt region sectors for Pioneers 10 and 11 in separate tables. Other appendices include trial computer simulation of analysis procedure, and calculation and tabulation of gegenschein brightness. A table (H-1) gives the gegenschein brightness as a function of heliocentric distance in astronomical units (AU). Copies of several articles of analysis and results of these experiments are appended. This document (TRF 833320), which is the sole source of reduced data from these experiments available from NSSDC, is in fiche form.

PIONEER 10, VAN ALLEN
JOVIAN CHARGED PARTICLES

Data set name - PIONEER 10 JUPITER ENCOUNTER PROTON AND
ELECTRON COUNT RATES ON TAPE

NSSDC ID 72-012A-11A, PION-10 JUPITER ENCOUNTER TAPES

Time period covered - 11/25/73 TO 12/18/73
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set contains Jupiter-encounter, particle count-rate data written at 800-bpi on 7-track, binary (odd-parity) magnetic tapes by a UNIVAC 418 computer. Each tape contains a single file composed of a number of 695-word (18-bit words) records. Each record contains spin-averaged rates for each channel and 26 frame-by-frame rates for each channel together with the corresponding spacecraft roll angles. The angular resolution is about 14 deg. Each record also contains time and spacecraft trajectory information and the spacecraft position and orientation in Jovian system-III coordinates.

Data set name - ONE HOUR CRUISE AVERAGES ON MAGNETIC TAPE
(*)

NSSDC ID 72-012A-11B, ONE HOUR CRUISE AVERAGES

Time period covered - 03/04/72 TO 05/16/82
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These experimenter-supplied, Jovian charged particle 1-h averaged cruise data are on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 418 computer. Each 1226-byte record contains spacecraft ID; time in year, day, begin and end day fractions; quarter hour no.; period (60 min); type of data; no. of samples; effective counts; sum of raw counts/0.09375; count rate average (counts/s); standard deviation of count rate; N (Fourier coefficients); K (phase amplitude); phase angle; sum of raw counts; and no. of errors. Various combinations of detectors yield information on 5- to 21-MeV electrons and 30- to 77.5-MeV protons; 0.55- to 21-MeV electrons and 6.6to 77.5-MeV protons; electrons above 31 MeV and protons above 77.5 MeV and electrons above 0.06 MeV.

PIONEER 10, WEINBERG
ZODIACAL-LIGHT TWO-COLOR
PHOTOPOLARIMETRY

Data set name - ZODIACAL LIGHT PHOTOMETER BACKGROUND SKY
DATA ON MAGNETIC TAPE

NSSDC ID 72-012A-14A, BACKGROUND SKY TAPES

Time period covered - 05/17/72 TO 10/06/73
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This magnetic tape data set contains reduced data of photopolarimetric measurements of the brightness of the sky. The tapes are 1600-bpi, 9-track, binary, created on a Univac 1110 computer. The first file is a directory containing two records of tape identification information. There are a variable number of data files, each beginning with a header record containing day of year, input tape number, section number (each day's observations of the sky may be broken into as many as eight sections delineated by look angle), start and stop times of observations, ephemeris information, number of stars used to get pointing correction, standard deviation, number of look angles, and look angles included in the section. The data records contain right ascension and declination of center of field of view, elongation angle of sun, blue and red brightness in Experiment Data Record (EDR) units, declination and right ascension of star, dwell time, and vignetting and right ascension correction.

********** PIONEER 11 **********

Data set name - PRELIMINARY TRAJECTORY CHART ON HARDCOPY

NSSDC ID 73-019A-00D, PRELIMINARY TRAJECTORY CHART

Time period covered - 02/27/72 TO 05/00/74
(Date supplied by experimenter)

This data set consists of two sets of charts of preliminary trajectories provided by JPL. One set of charts is for the spacecraft Pioneer E (launched August 27, 1969, but failed to attain orbit), Pioneer F (Pioneer 10, ID 72-012A), and Pioneer G (Pioneer 11, ID 73-019A). This set can be used to determine the position of the spacecraft with respect to the earth-sun line at various times into the missions. A user can also determine the estimated telemetry bit rate that will be used as a function of position of the spacecraft with respect to the sun, and as a function of the various communication antennas available to receive the data. The reverse side of the chart contains similar information for Mariner 71 (Mariner 9, ID 71-051A), Mariner 10 (Mariner 10, ID 73-085A), Helios A (ID 74-097A), and Pioneer 9 (68-100A) superimposed on the Pioneer E, F, and G trajectories. The second set of charts is similar to the first but contains Mariner 9, Pioneer 10, Pioneer 11, Mariner 10, and Helios A on one side, and Pioneer 10 and Pioneer 11 on the other side. Both sets of charts can be used to determine the direct line-of-sight viewing period.

PIONEER 11, ACUNA
JOVIAN MAGNETIC FIELD

Data set name - FLUXGATE MAGNETOMETER JOVIAN ENCOUNTER 5 MINUTE AVERAGES ON MAGNETIC TAPE

NSSDC ID 73-019A-14A, JOV. ENCOUNTER 5 MIN AVGS, TAPE

Time period covered - 12/02/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one card-image, 800-bpi, BCD magnetic tape created at NSSDC from a card deck supplied by the experimenter. The data consist of 5-min averaged magnetic field values obtained during the 12-h interval centered on the closest approach of Pioneer 11 to Jupiter. During this period, the spacecraft was within 8 Jovian radii of the planet. The data are time-continuous, except for a 1-h gap at perijove due mainly to spacecraft occultation. Each 5-min record contains spacecraft position information (Zenocentric distance, latitude, and system I and system III longitudes), field Cartesian components in celestial inertial coordinates, field spherical polar components in a Zenocentric coordinate system, and the number of finer time scale points in the 5-min average. See Mead, J. Geophys. Res., v. 79, p. 3514, for a discussion of the relevant coordinate systems. See Acuna and Ness, J. Geophys. Res., v. 81, p. 2917, for a discussion of the model planetary field derived from these data. There were several comment cards supplied with the card deck, and these have also been put on the magnetic tape.

Data set name - SATURN ENCOUNTER 5 MINUTE AVERAGED DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-14B, SATURN ENCOUNTER 5 MIN AVG DATA

Time period covered - 09/01/79 TO 09/01/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of 5-min averages of magnetic field measurements made with the fluxgate magnetometer during the Saturn encounter of Pioneer 11. The experimenter-supplied data are on a 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP IV computer from card images. Each data record contains time as year, day of year, and seconds of day; spacecraft to Saturn distance expressed in Saturn radii; Saturn-centered latitude and longitude of the spacecraft; radial, azimuthal, and polar components of the magnetic field expressed in Gauss in the same Saturn-centered spherical coordinate system. The first 21 records contain a description of the data. The data cover 10-1/2 hours, with radial distances from 6 Saturn radii inbound to 6 Saturn radii outbound.

PIONEER 11, ANDERSON
CELESTIAL MECHANICS

Data set name - DOPPLER TRACKING DATA AT JUPITER ENCOUNTER ON MAGNETIC TAPE

NSSDC ID 73-019A-09A, DOPPLER TRACKING (JUPITER ENCNTR)

Time period covered - 04/17/74 TO 12/25/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, from the principal investigator, is contained on magnetic tape (7-track, 800-bpi, 36-bit word length generated on a UNIVAC 1108 computer). The data include (a) the time of observation (in seconds since January 1, 1950, at zero hour, zero minute, and zero second), (b) the Doppler compression time (in hundredths of a second) or ranging components for range data, (c) the radio band indicator, (d) a tracking network indicator, (e) a transmitting station number, (f) a receiving station number, and (g) a data type indicator (e.g., one-way Doppler, two-way Doppler, etc.), (h) either the Doppler observable, the DRVID observable, the range observable, or the angle observable, (i) the reference frequency, and (j) the pass identification.

Data set name - DOPPLER TRACKING DATA SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-09B, DOPPLER TRACKING DATA SATURN ENCO

Time period covered - 08/01/79 TO 09/18/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Doppler tracking, Saturn encounter data are on 7-track, 800-bpi, binary magnetic tape created on a UNIVAC 1108 computer. The variable length records are divided into nine different groups. Each group contains a 5-word descriptive header followed by a variable number of data records. The file identification group contains one record identifying the spacecraft, system and program used to create the data, and the date the data were created. The fingerprints group gives more information on the program used to create the data. The user label group is optional and contains 3CD label information. The orbit data identifier group contains one record identifying the various fields and their positions within the orbit data record. The orbit data group contains the time of observation in seconds from January 1, 1950; compression time; radio band indicator; tracking network indicator; transmitting and receiving station number; data type; reference frequency; and pass and spacecraft identification. The ramp data identifier group contains the conversion factors used for the ramp data (data transmitted at a precisely controlled rate). The ramp data group is a series of records consisting of beginning and ending times of ramp in seconds past January 1, 1950, transmitter frequency (Hz) and frequency rate (Hz/s). The orbit data summary group contains the radio band indicator; tracking network indicator; receiving station number; data type; number of points; and time of earliest and latest points. The control statement group contains BCD card images of all the Orbit Data Editor (ODE) control statements. The end-of-file group contains only the 5-word header record. It is used to indicate the end of data.

PIONEER 11, BARNES
QUADRISPHERICAL PLASMA ANALYZER

Data set name - SOLAR WIND PROTON BULK SPEED DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-13A, SOLAR WIND PROTON BULK SPEED DATA

Time period covered - 04/21/73 TO 12/31/79
(As verified by NSSDC)

Quantity of data - 5 REELS OF TAPE

These experimenter-supplied, solar wind proton bulk speed data are on 9-track, 800-bpi, binary magnetic tape created on an IBM 360 computer. The unblocked, 32-byte records contain two 360 control words; year; day of year; milliseconds of day; chi-square; error with free proton bulk velocity (km/s); and free proton bulk velocity (km/sec). Time parameters and control words are in integer format. The remaining words are in floating-point representation.

Data set name - FULL HISTORY, SOLAR WIND PROTON PLASMA DATA ON MAGNETIC TAPE, (*)

NSSDC ID 73-019A-13B, FULL HISTORY, SOLAR WIND PROTONS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied data are written as file 1 on

a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. They consist of the following time-ordered solar wind parameters for proton: the number density (#/cc), temperature (deg K), bulk speed (km/s), flow azimuth, and flow elevation (deg). The parameters were derived by least-square fitting a convected isotropic maxwellian distribution function to the raw data; the bulk velocity was transformed to inertial coordinates centered on the spacecraft with the Z axis toward the north ecliptic pole and the X axis in the Z sun plane. Estimated errors are 12% for density, 20% for temperature, 20 km/s for speed, and 1 deg for angles. All analyzed fits are included in this data set, with bad and questionable fits flagged. There are up to 5 samples per hour. In addition to the five parameters, each data record contains the least-square uncertainties of each parameter, the chi-square of the fit, and trajectory parameters (heliocentric ecliptic). Microfiche plots of the parameters and related functions are available at NSSDC as 73-019A-13E and -13F.

Data set name - HOURLY AVERAGED SOLAR WIND PROTON PLASMA DATA AND MOMENTS ON MAGNETIC TAPE. (*)

NSSDC ID 73-019A-13C, HR AVG SOLAR WIND PROTONS+MOMENTS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set is written as file 2 on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. It consists of time-ordered hourly averages of the five solar wind plasma parameters and related functions. The parameters are density (protons/cc), temperature (deg K), bulk speed (km/s), and the two flow angles (deg). The functions are the momentum flux, convective pressure, thermal pressure, and energy density. Also included is the rms dispersion in each parameter average. The averages are generated from the full data set, 73-019A-13B.

Data set name - DAILY AVERAGED SOLAR WIND PROTON PLASMA DATA AND MOMENTS ON MAGNETIC TAPE. (*)

NSSDC ID 73-019A-13D, DAILY AVG SOL WIND PROTON+MOMENTS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set is written as file 3 on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 3081 computer. It consists of time-ordered daily averages of the five solar wind plasma parameters and related functions. The parameters are density (proton/cc), temperature (deg K), bulk speed (km/s), and the two flow angles (deg). The functions are the momentum flux, convective pressure, thermal pressure, and energy density. Also included are the rms dispersion in each of the parameter averages. The averages are generated from the full data set, 73-019A-13B. Microfiche listings of the daily averages are also available at NSSDC as 73-019A-13G.

Data set name - FULL HISTORY SOLAR WIND PROTON PLOTS ON MICROFICHE (*)

NSSDC ID 73-019A-13E, FULL HISTORY SOL WIND PROT PLOTS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 6 CARDS OF B/W MICROFICHE

These experimenter-generated microfiche plots present the time history of the proton plasma parameters and some related functions, obtained from the data set available on tape at NSSDC as 73-019A-13B. Bad fits have been omitted. There are three frames for each 40-day interval, containing temperature, density, bulk speed, momentum flux, convective pressure, thermal pressure, energy density, flow azimuth, flow elevation, and the chi-square of the fit. (The temperature, density, and speed plots are excerpted as 73-019A-13F.)

Data set name - 54-DAY SOLAR WIND PROTON T,N,V PLOTS ON MICROFICHE. (*)

NSSDC ID 73-019A-13F, 54-DAY S W PROTON T,N,V PLOTS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

These experimenter-generated microfiche plots present the time history of the proton plasma parameters obtained from the data set available on tape at NSSDC as 73-019A-13B. Bad fits have been omitted. Proton temperature, density, and bulk speed are plotted for each 54-day interval. (Data set 73-019A-13E contains plots of functions of these parameters as well.)

Data set name - LISTING OF DAILY AVERAGES SOLAR WIND PROTON AND MOMENTS ON MICROFICHE (*)

NSSDC ID 73-019A-13G, LIST DAY AVG S W PROTON+MOMENTS

Time period covered - 04/21/73 TO 12/06/81
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This experimenter-generated microfiche lists the daily averages of the solar wind plasma proton parameters and related functions (available on tape at NSSDC as 73-019A-13D). Listed are the temperature, density, bulk speed, momentum flux, thermal pressure, convective pressure, energy density, flow angles, and the heliocentric ecliptic distance, longitude, latitude, and solar latitude of the spacecraft.

PIONEER 11, FILLIUS
JOVIAN TRAPPED RADIATION

Data set name - JUPITER TRAPPED RADIATION DATA SUMMARY TAPES

NSSDC ID 73-019A-05A, ENCOUNTER DATA SUMMARY TAPES

Time period covered - 11/25/74 TO 12/09/74
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

The Jovian trapped-radiation data obtained by the University of California at San Diego are on 556-bpi, 7-track, binary magnetic tape recorded on a CDC 3600 computer from raw data tapes using a reduction program. The tapes were supplied by the experimenter. Each 300-word (48 bits/word) record contains one complete data summary (108 s each), along with associated information, including satellite number; mode of reduction; time and date; bit rates; and pulse, electrometer, and trajectory data.

Data set name - JUPITER TRAPPED RADIATION DATA ANALYSIS TAPE

NSSDC ID 73-019A-05B, ENCOUNTER BINARY REDUCTION TAPES

Time period covered - 12/02/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

The UCSD Jovian trapped radiation data are on 556-bpi, binary, 7-track magnetic tapes recorded on a CDC 3600 computer from raw data tapes using a reduction program. The tapes were supplied by the experimenter. All data are written as positive binary integers to facilitate decoding by different machines. Each 342-word (48 bits/word) record contains encounter data, including time in milliseconds; count rates; flag data; colatitudes, longitudes and radius for the spacecraft, sun and Jupiter; magnetic field values; L values; and round-trip light time.

Data set name - JOVIAN TRAPPED PARTICLE INTERPLANETARY DATA SUMMARIES ON MAGNETIC TAPE

NSSDC ID 73-019A-05C, INTERPLANETARY DATA SUMMARY TAPES

Time period covered - 04/16/73 TO 05/31/77
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These experimenter-supplied, interplanetary summary data are on 7-track, 556-bpi, binary magnetic tape created on a CDC 3600 computer. Each 300-word record contains one complete data summary (108 seconds), along with associated information including satellite number; mode of reduction (earth traversal, cruise, or Jupiter encounter); start and stop time of summary (in milliseconds); year and day of year; bit rates; and pulse, electrometer, and trajectory data.

Data set name - TRAPPED RADIATION DETECTOR SATURN ENCOUNTER BINARY REDUCTION DATA ON TAPE

NSSDC ID 73-019A-05D, SATURN ENCTR BINARY REDUCTION TPS

Time period covered - 08/30/79 TO 09/04/79
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These experimenter-supplied, Saturn encounter binary reduction data are on 7-track, 556-bpi, binary magnetic tape created on a CDC 3600 computer. Each physical block contains eight 42-word logical records consisting of Cole time (starting from January 1, 1972) in milliseconds; detector ID/HV status; count rate/electrometer range; encoder overflow/electrometer range; data flags; performance parameters; angular scan of look vector during date sample; angle between look vector and sun vector; satellite ephemeris information; telemetry format; bit rate; spacecraft number; receiving station number; angle between look vector and ecliptic nadir of look vector; and two fill words containing a-2. The last 6 words of each physical block consist of 5 fill words and the binary reduction tape format ID (3=Saturn encounter).

Data set name - INHOMOGENEOUS DAILY SUMMARY DATA AT VARIOUS BIT RATES ON MAGNETIC TAPE

NSSDC ID 73-019A-05E, INHOMOGENEOUS DAILY SUM INTERPLNT

Time period covered - 04/16/73 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, inhomogeneous daily summary interplanetary data are on 7-track, 800-bpi, binary magnetic tape created on a CDC 3600 computer. Each 300-word record contains one complete data summary and consists of satellite no.; mode of reduction; start and stop time of summary in Cole time (ms); day of year and year; EDR tape name; binary reduction tape name; data format; bit rate; round trip light time (ms); min., max., and average pulse temperature; and high voltage regulator current and detector C temperature; pulse data consisting of average no. of counts per reading, RMS deviation, max. and min. residue, no. of readings, total counts, total time (s), average no. of counts per second, and probable error; electrometer data consisting of average reading, RMS deviation, max. and min. residue, max., min., and average current, and no. of readings; and 41 words of ephemeris information for one of three modes -- earth traversal, cruise, or Jupiter encounter.

Data set name - INTERPLANETARY DATA PLOTS ON MICROFILM

NSSDC ID 73-019A-05F, INTERPLANETARY DATA PLOTS,MFILM

Time period covered - 04/16/73 TO 02/09/82
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of plots of count rates vs time from three channels on each of the C, M, and E detectors on the Trapped Radiation Experiment for the interplanetary medium. This data set is on the same roll as 72-012A-05E.

Data set name - 24-HOUR COMPRESSED SUMMARY DATA ON MAGNETIC TAPE (*)

NSSDC ID 73-019A-05G, 24-HOUR COMPRESSED SUMMARY DATA

Time period covered - 02/01/73 TO 12/31/83
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These experimenter-supplied, 24-hour compressed summary data are on 9-track, 1600-bpi, binary magnetic tape created on a VAX 11/780 computer. Each 300-word record contains one complete summary, along with associated information consistig of satellite number; mode of reduction, start and stop time of summary (Cole time); year and day of year; tape ID; data and bit rate flags; round trip light time (ms); minimum, maximum, and average pulse temperature, high voltage regulator current, and detector C temperature; average pulse counts per reading; RMS deviation; number of readings; total pulse data; total time (seconds); average number of counts/s; average electromagnetic reading; maximum and minimum residue; average, max., and min. current; number of readings; and trajectory data for earth traversal, cruise, and Jupiter encounter modes.

PIONEER 11, GEMRELS
IMAGING PHOTOPOLARIMETER (IPP)

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 73-019A-07A, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 11/24/74 TO 12/04/74
(Date supplied by experimenter)

Quantity of data - 25 COLOR POSITIVE FRAMES

This data set consists of photographs from Pioneer 11 which have been released to the press. Included are pictures of Jupiter, Jupiter's Great Red Spot, Io, Ganymede and Callisto. Also included are full disk color images of Saturn and its rings. Captions are available for each photograph.

Data set name - POLARIZATION DATA FOR JUPITER

NSSDC ID 73-019A-07B, POLARIZATION DATA ON MICROFICHE

Time period covered - 05/30/73 TO 09/05/79
(As verified by NSSDC)

Quantity of data - 256 CARDS OF B/W MICROFICHE

This data set on microfiche contains polarization data from the polarimeter of Pioneer 11 of Jupiter. The data are in tabular form and contain the following information: (1) sector number, (2) number of rolls, (3) polarization values, (4) standard deviation, and (5) maximum and minimum values. The heading of each card indicates which aperture was used. The first card contains computer program information such as command, address, length, file, and miscellaneous information.

Data set name - BLACK AND WHITE PHOTOPOLARIMETER IMAGERY

NSSDC ID 73-019A-07C, BLACK & WHITE POLARIMETER IMAGERY

Time period covered - 11/30/74 TO 12/04/74
(As verified by NSSDC)

Quantity of data - 288 B/W NEGATIVE FRAMES

This data set consists of B/W negatives of Pioneer 11 images obtained from the Imaging Photopolarimeter experiment (IPP). When the caption is at the bottom, north is up and the rising limb is on the left. The images are displayed at a constant scale of 0.8 mm/spacecraft roll (scan by IPP). There are two images (one red and one blue) for each frame number. The numbering system proceeds from high numbers and decreases until closest approach designated C, such that number 1 is at Jupiter periapsis. Numbers then increase on the outgoing trajectory and are designated D. For example, image A104R, for which film was exposed through a red filter, was obtained while the spacecraft was approaching Jupiter at a far distance from the planet. The numbers were assigned before image display, so there are some numbers for which good data were not obtained. The quality of the images ranges from poor to good.

Data set name - PHOTOS FROM PIONEER 11 IMAGE PHOTOPOLARIMETER ON 8X10 NEGATIVE FILM

NSSDC ID 73-019A-07D, B/W 8X10 PHOTOGRAPHY

Time period covered - 11/30/74 TO 12/04/74
(As verified by NSSDC)

Quantity of data - 47 B/W NEGATIVE FRAMES

This data set consists of B/W negatives of Pioneer 11 images obtained from the Imaging Photopolarimeter experiment(IPP). When viewed with the caption at the bottom, north is up and the rising limb is on the left. The images are displayed at a constant scale of 0.8 mm per spacecraft roll (scan by IPP). There are two images, one red and one blue for each frame number. The numbering system proceeds from high numbers and decreases until closest approach (designated C) so that number 1 is at periapsis. They then increase on the outgoing trajectory and are designated D. For example, image C 65 R was exposed through a red filter while the spacecraft was approaching Jupiter at a far distance from the planet. There is a corresponding frame in the blue (B). The numbers were assigned before image display, and so, there are some numbers for which no good data images exist. The images are displayed with only a one-dimensional rectification, so there is some distortion present. The quality of detail of the images ranges from poor to good.

Data set name - INDEX TO PHOTOS OF PIONEER 11 IMAGE PHOTOPOLARIMETER ON FICHE

NSSDC ID 73-019A-07E, INDEXES OF DATA

Time period covered - 11/23/74 TO 12/06/74
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set is the index for the images from the Imaging Photopolarimeter experiment (IPP) on Pioneer 11. The index is sequential, and the columns in the index are as follows: (1) month and day, (2) frame number (with filter designation following), (3) date and time in UT, designated as day of year, hour and minute, (4) range in kilometers from spacecraft to center of Jupiter, (5) fixed size (one picture element in kilometers projected on the planet), (6) phase angle (degree), (7) latitude (at subspacecraft), (8) longitude (in system I), and (9) longitude (in system II).

Data set name - IMAGING PHOTOPOLARIMETER POLARIZATION DATA ON MAG TAPE

NSSDC ID 73-019A-07F, POLARIZATION DATA ON TAPE

Time period covered - 05/31/73 TO 10/29/76
(As verified by NSSDC)

Quantity of data - 12 REELS OF TAPE

This data set is polarization data from the Imaging Photopolarimeter experiment (IPP) on the Pioneer 10 and 11 missions. The data are on 7-track, 556-bpi, HCD, unblocked with variable length, magnetic tapes. A copy of the CDC 6400 program COPTAV, used to generate these tapes, accompanies them. Tables 1 and 2 provide lists of Pioneer 10 and 11 observations (day/yr), the number of 4-roll data sets (each set of which may yield a polarization solution), and the number of sectors/roll (SECT). Each sector consists of four words (channels BP, BS, RP, RS). These tables also list the tape files and object observed for each day. The record length varies as 4* SECT. Each observing day consists of two files: (1) the header record (similar to that found on the EDR) with indication whether original EDR data have been edited or not ("edited PLUM run" or "PLUM run", respectively) prior to being averaged by the program PLUM and (2) the data file consisting of 2-record sets, the spacecraft altitudes (A-84) in the first record, spacecraft (EDR) housekeeping, and the data (C-M subscript 56) in the second record. The second record length may vary from day to day as a function of 4* SECT (Table 1). Each dual record set pertains to data averaged over a single aperture (word 81 of the housekeeping data). A polarimetric solution is computed from an 8-record set with records 2, 4, 6, and 8 containing data for apertures 0.5 mr, lambda/2, DP, and 8 mr (records 4, 5, 6, 4 respectively). Table 3 equates parameters A-M found in COPTAV with the conventional names or mnemonics given in Pioneer documentation. These tapes contain the same kind of information as the PLUM microfiche data sets (72-012A-07B and 73-019A-07B), except they do not contain the standard deviations for intensities included in the PLUM microfiche. It is recommended that the PLUM microfiche be used if possible.

Data set name - JUPITER IMAGE LOG ON MICROFICHE

NSSDC ID 73-019A-07G, JUPITER IMAGE LOG ON MICROFICHE

Time period covered - 11/23/74 TO 12/09/74
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of a log of the images of Jupiter made by the missions of Pioneer 10 and 11. Images are identified by a series letter and a sequence number. The letter identifies the spacecraft: A and B are for Pioneer 10, and C and D are for Pioneer 11. A indicates images taken prior to perijove and the numbers decrease monotonically, while B denotes after perijove and the numbers increase monotonically. Likewise for Pioneer 11, C denotes ante-periapsis, and D denotes postperiapsis. Other parameters are also listed giving earth transmit time, earth receipt time, stretch factor, telescope motion, range to Jupiter, phase angle, longitude of central meridian on system II, pixel size, zenocentric latitude, cone angle, and clock angle.

Data set name - JUPITER COLOR IMAGERY

NSSDC ID 73-019A-07H, JUPITER COLOR IMAGERY

Time period covered - 11/29/74 TO 12/06/74
(As verified by NSSDC)

Quantity of data - 47 COLOR NEGATIVE FRAMES

This data set, supplied by the investigator, consists of color negatives from Pioneer 11 obtained by the Imaging Photopolarimeter experiment (IPP). The Imaging Photopolarimeter gathered data using the red and blue components of the light reflected from Jupiter. Reconstructing images by using the red and blue produced a purple image; however, it was possible to synthesize a green image so that, when all the images were composited, an adequate color image was produced.

Data set name - SATURN ENCOUNTER

NSSDC ID 73-019A-07J, SATURN ENCOUNTER

Time period covered - 08/23/79 TO 09/05/79
(As verified by NSSDC)

Quantity of data - 82 COLOR POSITIVE FRAMES

These data, supplied by the experimenter, consist of images obtained during the Pioneer 11 encounter with Saturn. The images encompass days of year (DOY) 237-248, 1979. Most of the images are faint, or distorted, or have many lines of missing information. The best frames among these are F35A, showing atmospheric structure of Saturn, polar hood, and the rings well. F12B is good for the ring structures, showing the rings only. Good images among the negatives are F37 (blue), F33A, F33R (red), F19.58*R, and F12B and R. The best images among the color are F37, F33, F19.5, and F12 (The connotation of letters F and G carried on the scheme of designating approach and recession to Saturn as to Jupiter previously). The information block on the stereo pairs gives range, phase central point latitude, start and stop times of exposure sectors, filter used, and data processed. The best stereo pairs are F37, F32, F12 (for rings), F19.5, and F33. Accompanying the photos is a partial listing of the photos with a brief description of features visible and a complete listing which gives the following information: (1) frame number (image seq. No.), (2) midtime in DOY, h, min; (3) range in km; (4) pixel size in km, (5) phase angle in degrees; (6) latitude; (7) local central meridian (LCM) and (8) a "not displayed" code. The "not displayed" code is explained separately.

Data set name - SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-07K, SATURN ENCOUNTER DATA ON MAG TAPE

Time period covered - 08/25/79 TO 09/05/79
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These Saturn encounter data are on 9-track, 1600-bpi, ASCII magnetic tape created on a CDC 6400 computer. Each tape contains a copy of the "Imaging Photopolarimeter Tape User's Guide" document followed by sets of four files. Each set records all relevant data pertaining to the specified data-taking time-block. The first file in the set contains logistics information. File 2 contains a list of all commands sent to the spacecraft during the time-block. The third file contains spacecraft attitude data (repeated every 60 characters for different dates and times). File 4 contains housekeeping data plus all intensities telemetered during a data cycle (one rotation of the spacecraft about its spin axis) of the Imaging Photopolarimeter (IPP) instrument.

Data set name - INDEX OF JUPITER IMAGES

NSSDC ID 73-019A-07L, INDEX OF JUPITER IMAGES

Time period covered - (N/A)

Quantity of data - 4 PAGES OF UNBOUND HARDCOPY

This data set consists of the index of the photos obtained on the Pioneer 11 flyby of Jupiter on December 4, 1974, from the Imaging Photopolarimeter (IPP). The parameters provided are (1) the imaging sequence number, (2) mid-time of the exposure, (3) range of the spacecraft from the planet, (4) pixel size of the footprint on the planet's surface, from which resolution can be derived, (5) phase angle, (6) latitude, and (7) longitude of the center of the disk in both systems I and II. The numbering decreases until closest approach and is preceded by the letter C. After closest approach, the numbering increases and is preceded by the letter D. Therefore, C numbers indicate approach and D numbers denote recession. These are on the same roll as data set 72-012A-07J.

Data set name - INDEX OF SATURN IMAGES

NSSDC ID 73-019A-07M, INDEX OF SATURN IMAGES

Time period covered - (N/A)

Quantity of data - 4 PAGES OF UNBOUND HARDCOPY

This data set consists of the index of the photos obtained on the Pioneer 11 flyby of Saturn on August 5, 1979, from the Imaging Photopolarimeter. The parameters provided are (1) the imaging sequence number, (2) mid-time of the exposure, (3) range of the spacecraft from the planet, (4) pixel size of the footprint on the planet's surface, from which resolution can be derived, (5) phase angle, (6) latitude, and (7) longitude of the center of the disk, and (8) a code for not displaying a picture. The numbering decreases until closest approach and is preceded by the letter F. After closest approach, the numbering increases and is preceded by the letter G. These are on the same roll as data set 72-012A-07J.

PIONEER 11, JUDGE
ULTRAVIOLET PHOTOMETRY

Data set name - EUV EDR PHOTON EMISSION DATA ON MAGNETIC TAPE (*)

NSSDC ID 73-019A-06A, EUV EDR PHOTON EMISSION DATA

Time period covered - 04/06/73 TO 05/23/81
(As verified by NSSDC)

Quantity of data - 45 REELS OF TAPE

These experimenter-supplied, Ultraviolet Photometer data are on 9-track, 6250-bpi, binary magnetic tapes created on an IBM 360 computer. Each tape contains data from a varying number of days' worth of data. Data from each day consist of four data files called an Experiment Data Record (EDR). Each EDR consists of (1) a logistics file containing spacecraft and tape identification information; (2) a command file containing day of year and time of day of command verification, command mnemonic (instrument on, instrument off, and remove cover), and command status; (3) a spacecraft attitude file containing elapsed days since start of year, elapsed time in milliseconds (ms) since start of day, ecliptic latitude and longitude of spin axis, and clock angle of sun (Helios) and star (Canopus) in degrees; and (4) an experiment data file containing elapsed time in day of year and milliseconds of day, time correction flag, reference select status (clock angle determination), signal noise, Deep Space Station number, bit rate, mode (real time, telemetry store or memory readout), round trip light time (ms), extended frame counter, star delay time, roll attitude timer, spin period, roll pulse and roll-index pulse phase error measurement, time-of-roll attitude timer, dc bus voltage and current, power status, platform temperature, and a data word containing subcommutated engineering data (when related to the ultraviolet photometer) and two mainframe words.

Data set name - USC ULTRAVIOLET DATA PLOTS

NSSDC ID 73-019A-06B, USC ULTRAVIOLET DATA PLOTS

Time period covered - 04/30/73 TO 09/30/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, submitted by the principal investigator in hardcopy form, was microfilmed by NSSDC and is available from NSSDC in that format. It covers both Pioneers 10 and 11 on the same roll. The plots give time-averaged counting rate vs clock-angle for the two-channel photometer. The title contains the Pss Pass (pss pppp ddd mmm dd yyyy), where pss = 10 for Pioneer 10 and pss = 11 for Pioneer 11, pppp = pass number or number of days since launch, ddd = day of year, mmm = month, dd = date, and yyyy = year. The Y axis represents the average count rate in counts per second, while the X axis gives the clock-angle in degrees. At the bottom of the plot are listed the following chan: H- hydrogen or lambda L, He- helium or lambda S, the channel of the instrument; interval times: time period for which the average is taken, given in hours, minutes, and seconds, as follows Min, Avg, Max = values for corresponding count rate given in counts per second; Min, Clock, Max = clock-angle where (minimum/maximum) count rate occurs; and # OBS = number of observations made by the instrument.

PIONEER 11, KINARD
METEOROID DETECTORS

Data set name - METEOROID ENVIRONMENT DATA FOR JUPITER

NSSDC ID 73-019A-04A, METEOROID ENVIRONMENT DATA/JUP

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set consists of published documents by the principal investigator and co-investigators on the Meteoroid Detector experiment on Pioneers 10 and 11 at Jupiter, and constitutes the only data to be deposited at NSSDC. There are five papers: (1) Humes, D. H., et al., "Cosmic Dust Encountered by Pioneers 10 and 11" a paper presented at the 1973 AGU meeting; (2) Kinard, W. H., et al., "Interplanetary and Near-Jupiter Meteoroid Environments: Preliminary Results from the Meteoroid Detector Experiment;" Science, v. 183, n. 4122, p. 321, 1974; (3) Humes, D. H., et al., "The Interplanetary and Near-Jupiter Meteoroid Environments," J. Geophys. Res., v. 79, n. 25, 1974; (4) Humes, D. H., et al., "Pioneer 11 Meteoroid Detection Experiment: Preliminary Results," Science, v. 188, n. 4187, p. 473, 1975; and (5) Humes, D. H., "The Jovian Meteoroid Environment, in Jupiter," edited by T. Gehrels and M. S. Matthews, U. of Ariz. Press, Tucson, Arizona, pp. 1052-67, 1976. In these documents, data that are presented are plots of (1) cells penetrated vs time from launch for various thicknesses of cells, (2) penetration flux vs distance from sun for Explorer 23 and Pioneer 10, (3) spatial density vs sun distance, for assumed circular and elliptical orbits for Pioneer 10 data, (4) number of cells punctured vs time after instrument turned on for Pioneer 10, (5) interval between penetrations vs time from periapsis for Pioneer 10, (6) distance from Jupiter vs time to periapsis for Pioneer 10, (7) penetration flux vs distance from Jupiter for Pioneer 10, (8) average impact speed vs distance from Jupiter for Pioneer 10, (9) ratio of effective area to actual area vs distance from Jupiter for Pioneer 10, (10) spatial density vs distance from Jupiter and from channel 0 for Pioneers 10 and 11, (11) log cumulative spatial density vs log mass at 5 AU, (12) calculated log cumulative flux vs log mass into the Jovian atmosphere, and (13) pressure vs meteoroid mass. These documents have been microfiched onto one data set, which is also listed under NSSDC ID 72-012A-04A. This same data set also contains Pioneer 11 data from near Saturn, which is described under NSSDC ID 73-019A-04B.

Data set name - RESULTS FROM METEOROID EXPERIMENT FOR SATURN

NSSDC ID 73-019A-04B, METEOROID EXP RESULTS AT SATURN

Time period covered - (N/A)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of published documents by the principal investigator and co-investigators for the Meteoroid Detector Experiment on Pioneer 11 at Saturn, and it constitutes the only data submission to NSSDC from this experiment. There are three documents: (1) Humes, D. H., "Impact of Saturn Ring Particles on Pioneer 11," presented at the AGU meeting, Dec. 3-7, 1979, San Francisco, California; (2) Humes, D. H., et al., "Impact of Saturn Ring Particles on Pioneer 11," Science, v. 207, pp. 443-4, 1980; and (3) Humes, D. H., "Results of Pioneer 10 and 11 Meteoroid Experiments: Interplanetary and Near-Saturn," J. Geophys. Res., v. 85, n. A11, pp. 5841-52, 1980. Data presented in these documents are plots of (1) Saturn radial distance vs time from periapsis for channels 0 and 1, (2) number of impacts vs semi-major axis (a), (3) ratio of impacts (3-50 Saturn radii) to number of impacts (less than 3 Saturn radii) vs the semi-major axis (a), (4) altitude above ring-plane vs time from ring plane crossing, (5) probability of impact vs particle diameter, (6) ratio of effective area to actual area vs angle from spin axis, (7) cells penetrated vs time from launch, for Jupiter and Saturn, (8) Saturn distance vs time from periapsis, (9) penetration flux vs heliocentric range showing Jupiter and Saturn fluxes, (10) eccentricity vs inclination, (11) penetration flux vs heliocentric range, (12) log penetration flux vs heliocentric range for various inclination distributions, (13) penetration flux vs heliocentric range, and (14) ratio of near-Jupiter flux to interplanetary flux vs eccentricity. These documents have been microfiched together on the same data set as 72-012A-04A and 73-019A-04A, which contain data from near Jupiter from Pioneer 10 and 11.

PIONEER 11, KLIORE
S-BAND OCCULTATION

Data set name - FINAL PLOTS AND LISTINGS OF JUPITER OCCULTATION DATA, ON MICROFILM

NSSDC ID 73-019A-10A, JUP.OCCULT - FINAL PLTS/LSTS MFLM

Time period covered - 12/03/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained on 16-mm microfilm and

consists of listings of the outputs of the intermediate and final programs used to analyze Pioneer 11 data resulting from occultations of Jupiter. These data include the derived atmospheric parameters (e.g., temperature, pressure, lapse rate) that appear nowhere else. Other outputs, resulting from intermediate programs, are also listed. These data were received from the principal investigator. Included on this microfilm are data from the Pioneer 10 occultation of Jupiter.

Data set name - INTERMEDIATE DATA FILES OF JUPITER OCCULTATION DATA, ON MAGNETIC TAPE

NSSDC ID 73-019A-10B, JUP.OCCULT -- INTERMED.DATA, TAPE

Time period covered - 12/03/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set was generated by the principal investigator using the Pioneer 11 Jovian radio occultation data as input to a subset of the occultation software. The software removed drift and bias from frequency residuals, computed bending angle, ray-asymptote distance, power corrections, and refractivity as a function of radius to the center of the planet Jupiter. The data set is contained on one 7-track, 800-bpi, binary magnetic tape generated on a UNIVAC 1108 computer.

Data set name - REDUCED TELEMETRY SIGNALS FOR JUPITER OCCULTATION, ON MAGNETIC TAPE

NSSDC ID 73-019A-10C, JUP.OCCULT -- RED.TM SIGNALS,TAPE

Time period covered - 12/03/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

This data set is contained on three magnetic tapes supplied by the principal investigator. These tapes, which are 9-track, 800-bpi, odd-parity tapes generated on a UNIVAC 1108 computer, were prepared by sampling the analog spacecraft signal and time from analog-recorded tapes. The sample rate is 40,000 samples/s for both S-band and X-band. The data on the tapes are a digital representation of recorded signals received from the spacecraft, the time of reception (UTC), and heading information. These magnetic tapes contain only the data from the Jupiter occultation.

PIONEER 11, MCDONALD
COSMIC-RAY SPECTRA

Data set name - 15-MIN AVERAGED JUPITER ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-12A, 15-MIN AVERAGED JUPITER ENCOUNTER

Time period covered - 11/26/74 TO 12/09/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 15-minute averaged Jupiter encounter data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. Each variable-length logical record contains number of data items in the record; no. of averaging intervals in the records; 132-character title identifying the satellite and giving the start time of the first and last averaging interval in the record; 132-character descriptions of a variable number of data items; and a variable number of averaging interval entries consisting of time in year, month, day, hour, minute and seconds, and a 2-word flux entry containing a flux value and associated statistical error.

Data set name - 15-MIN AVERAGED SATURN ENCOUNTER DATA ON MAGNETIC TAPE.

NSSDC ID 73-019A-12B, 15-MIN AVERAGED SATURN ENCOUNTER

Time period covered - 08/31/79 TO 09/04/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 15-minute averaged Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. Each variable length logical record contains number of data items in the record; no. of averaging intervals in the records; 132-character title identifying the satellite and giving the start time of the first and last averaging interval in the record; 132-character descriptions of a variable number of data items; and a variable number of averaging interval entries consisting of time in year, month, day, hour, minute, and seconds, and a 2-word flux entry containing a flux value and associated statistical error.

Data set name - 6 HOUR AVERAGED INTERPLANETARY DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-12C, 6-HR AVERAGED INTERPLANETARY DATA

Time period covered - 04/08/73 TO 12/31/85
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 6-h averaged interplanetary data are on a 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 computer. Each variable length logical record contains number of data items in the record; number of averaging intervals in the records; 132-character title identifying the satellite and giving the start time of the first and last averaging interval in the record; 132-character descriptions of a variable number of data items; a variable number of averaging interval entries consisting of time in year, month, day, hour, minute, and seconds; and a 2-word flux entry containing a flux value and associated statistical error.

PIONEER 11, SIMPSON
CHARGED PARTICLE COMPOSITION

Data set name - 15-MIN ACCUMULATED PULSE-HEIGHT ANALYSIS DATA ON TAPE (*)

NSSDC ID 73-019A-02A, 15-MIN PULSE HEIGHT TAPES

Time period covered - 04/07/73 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 50 REELS OF TAPE

This data set consists of 7-track, binary, 800-bpi tapes produced by the experimenter on an XDS-930 computer. The data include coincidence-mode count rates together with 128-channel pulse heights of the three pulse-height analyzed elements (D1, D2, and D5) of the seven-element detector telescope, accumulated during 15-min periods of real time. Data for each 15-min period are organized into a variable number of variable-length physical records, the first of which is a 120-word (24-bit words) header record containing the time, count rates, spacecraft attitude angles, and housekeeping data. Subsequent records contain triads of pulse-height analyzer measurements occurring within the 15-min period. No ephemeris data are included on the tapes.

Data set name - 5-MIN. ACCUMULATED SECTORED COUNTING-RATE SUMMARY TAPES (*)

NSSDC ID 73-019A-02B, 5-MIN SECTORED COUNT-RATE TAPES

Time period covered - 04/07/73 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 23 REELS OF TAPE

This data set is contained on 7-track, binary magnetic tapes written at 800-bpi with an XDS-930 computer. The data are grouped into physical records of 960 24-bit words. Each physical record contains six 160-word logical records. Each logical record contains all experiment-mode count-rate data accumulated over a nominal period of 5 min. Information on particle arrival directions is provided by count rates recorded in each of the eight octants (sectors) about the spacecraft spin axis for the main and low-energy telescopes. No ephemeris data are included on the tapes.

Data set name - COUNT RATE PLOTS BY SOLAR ROTATIONS ON MICROFILM

NSSDC ID 73-019A-02C, SOL.ROT.COUNT RATE PLOTS, MFILM

Time period covered - 04/06/73 TO 01/14/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of coincidence-mode, count-rate plots on microfilm. Each plot covers a 28-day interval beginning each 27-day solar rotation. The data begin in solar rotation 1910 on April 6, 1973. For each rotation, 13 count rates and 2 temperature readings are presented. Rates from the main telescope, the low-energy subsystem telescope, the electron current detector, and the fission cell detector are included. Individual data points represent 15-min or 1- or 2-h averages, depending on the mode.

PIONEER 11, SMITH
MAGNETIC FIELDS

Data set name - MINUTE AND HOURLY AVERAGED VECTOR
MAGNETIC FIELD PLOTS ON MICROFILM

NSSDC ID 73-019A-01A, 1 MIN AVGD VR MAG FIELD DATA,FILM

Time period covered - 04/06/73 TO 06/02/73
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of experimenter-supplied, 35-mm microfilm plots of magnetic field magnitudes and direction angles in RTN coordinates (see experiment description for definition). There are 3-h plots with 1-min averaged data and 1-week plots with 1-h averaged data. The hourly averages are plotted on several fixed scales for field magnitudes.

Data set name - 1 MINUTE AVERAGED VECTOR MAGNETIC FIELD
DATA FOR JUPITER ENCOUNTER ON TAPE (*)

NSSDC ID 73-019A-01B, 1 MIN, HOURLY, DAILY AVG, CRUISE

Time period covered - 04/06/73 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 59 REELS OF TAPE

This data set consists of experimenter-supplied 7-track, 800-bpi, BCD magnetic tapes. Each tape contains 1-min, 1-h, and 1-day averaged data, typically for 4 or 5 weeks. The data consist of three field components, six covariances, three direction cosines, field magnitude average, and magnitude of the average field. RTN coordinates are used (see experiment description for definition). Heliocentric spacecraft ephemeris information is also given with daily resolution.

Data set name - HIGH TIME RESOLUTION (5.3 VECTORS/SEC)
INTERPLANETARY DATA ON TAPE

NSSDC ID 73-019A-01C, HI TIME RES B VRS, TAPE

Time period covered - 04/30/73 TO 12/14/74
(As verified by NSSDC)

Quantity of data - 16 REELS OF TAPE

This data set consists of experimenter-supplied 7-track tapes written at 800-bpi, binary, on a UNIVAC 1108 computer. The tapes contain the experimenter's finest time scale data (5.3 vectors/s). The tapes consists of two files, one for each day. Each file has a variable number of physical blocks, each of which in turn has a header and a variable number of variable-length logical records. Each logical record consists of a series of consecutive data points. Except for the first 12 words of each header record, the 36 bits of each computer word are distributed among various physical parameters. Data include time, heliocentric ephemerides, spectrum analyzer data, and magnetic field Cartesian components in solar interplanetary coordinates (X-axis from sun to spacecraft; Y-axis obtained as the vector product of the solar spin vector and the unit vector along X, positive in the direction of planetary motion; Z-axis completes orthogonal, right-handed system).

Data set name - SATURN ENCOUNTER,ONE MINUTE AVERAGED, PE
COORDINATE DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-01D, SATURN ENCOUNTER MINUTE AVG PE CO

Time period covered - 08/30/79 TO 09/08/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Saturn encounter 1-min averaged Pioneer inertial (PE) coordinates data are written in two files on a 9-track, 1600-bpi, ASCII magnetic tape. The first file contains magnetometer data with 50 blocks (physical records) per day of data. The first block is a 240-byte header containing the date, spacecraft ID (G=Pioneer 11), trajectory parameters, and identifying text. Each logical record (30 per block) of blocks 2-50 contains length of data used (MS) and 14 magnetic field data averages in the PE coordinate system. Blocks 2-49 contain the minute averages for each day. Hourly averages and a daily average for the same time period are found in block 50. The 14 magnetic field parameters included are the three Cartesian components of the field, the squares of these components, the products of each possible pair of components, the direction cosines (i.e., each component divided by the total field), the field magnitude, and the square of the field magnitude. File 2 contains trajectory information consisting of spacecraft ephemeris time (decimal days from day 244), ground-received UT, one-way light time (seconds), Pioneer celestial (AE) system latitude and longitude of the earth, sun, and spacecraft, kronographic (KG) system latitude and longitude of the spacecraft temporary angle, and the radial distance of the spacecraft from Saturn (in Saturn radii).

Data set name - JUPITER ENCOUNTER INSIDE 7 RJ, JG
COORDINATES DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-01E, JUPITER ENC.TRAJ.INSIDE 7RJ JG CO

Time period covered - 12/03/74 TO 12/03/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer magnetometer data for Jupiter close encounters are written in two files on a 9-track, 1600-bpi, ASCII magnetic tape. The first file contains Pioneer 10 data inside 7 Jupiter radii; the second file contains Pioneer 11 data inside 7 Jupiter radii. A third file contains documentation describing the data. Each data record is 80 bytes long and contains the following: ground-received time in days (3.0=Dec.3,00:00); distance of satellite from Jupiter (in Jupiter radii); latitude and longitude of satellite in the Jupiter-centered JG system; and 1-min averages of X, Y, Z components of field in JG. Jovigraphic (JG) coordinates are defined as follows: the X-axis is in the direction of G, the equatorial vector lying in the System III prime meridian 1957-0; the Z-axis is in the direction of J, the spin-axis of Jupiter; and the Y-axis is parallel to Jupiter's equatorial plane and completes a right-handed orthogonal system.

Data set name - JUPITER ENCOUNTER 1 MINUTE AVERAGED DATA
ON MAGNETIC TAPE (*)

NSSDC ID 73-019A-01F, JUPITER ENCOUNTER-1 MIN. AVGD TAP

Time period covered - 11/24/74 TO 12/24/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of an experimenter-supplied 7-track, 800-bpi, BCD magnetic tape. The tape contains one file of 1-min, 1-h, and 1-d averaged data. There are 50 blocks per day. The first block is a header record 120 bytes long. Each of the remaining 49 blocks is 7200 bytes long and consists of 30 logical records of 240 bytes each. The 1440 logical records of blocks 2-49 contain averages for the 1440 minutes of the day. In block 50, the first 24 logical records contain hour averages, the 25th contains day averages and the last 5 contain blanks. The data consist of three field components, six covariances, three direction cosines, field magnitude average, and magnitude of the average field, in the coordinate system defined by the header blocks. The coordinate system used is the "S, J system." In this system, if S and J denote the unit vectors from the spacecraft to the sun and from the spacecraft to Jupiter, respectively, then the X, Y, and Z coordinates in the data set correspond to S, J cross S, and X cross Y, respectively.

Data set name - HOURLY & DAILY MAGNETIC FIELD AVERAGES ON
MAGNETIC TAPE (*)

NSSDC ID 73-019A-01G, HRLY & DAILY MAG FLD AVGS

Time period covered - 04/06/73 TO 12/31/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of a 9-track, 1600-bpi, ASCII magnetic tape created at NSSDC on a MODCOMP computer by extracting the hourly and daily averages from 73-019A-01B. Each physical block of 7440 bytes (31 logical records of 240 bytes) contain the date, trajectory data (up to 3/31/76), and number of milliseconds of data in each average, as well as the hourly and daily averages for the three magnetic field components, six covariances, three direction cosines, field magnitude average, and magnitude of the average field. RTN coordinates are used (see experiment description for their definition).

PIONEER 11, SOBERMAN
ASTEROID/METEOROID ASTRONOMY

Data set name - REFORMATTED REDUCED DATA ON SKY/ASTEROID/
METEROID LIGHT EMISSIONS ON MAG. TAPES

NSSDC ID 73-019A-03A, ASTEROID/METEOROID/SKY EMISSIONS

Time period covered - 04/11/73 TO 12/29/74
(As verified by NSSDC)

Quantity of data - 39 REELS OF TAPE

The Asteroid/Meteoroid Detector (AMD) data are on 556-bpi, 7-track magnetic tape recorded on an SDS 930 computer. The data are mixed mode and each tape is multifiled. A data tape referred to as an Experimenter Data Record (EDR) was received by the experimenter for each day of the mission of the spacecraft. Each EDR consists of four tape files. The first file is a level defining the time period covered by the EDR and giving other miscellaneous descriptive information. The second file contains a list of all commands sent to the spacecraft during the given day. These include commands to orient the spacecraft, turn instruments on and off, etc. The third file contains spacecraft attitude data for the preceding 31 days, including celestial latitude and longitude. These first three files are in binary-coded-decimal format. The fourth file is in binary format and contains the bulk of the AMD instrument data. In order to facilitate the analysis of the AMD data, the original EDR tapes were reformatted and several days' data were copied onto one reel of magnetic tape.

Data set name - FINAL REPORT OF DATA ANALYSIS

NSSDC ID 73-019A-03B, DATA ANALYSIS, FINAL REPORT

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set is the final report containing the data analysis of the Asteroid/Meteoroid Astronomy experiments carried in Pioneers 10 and 11. It discusses methods of reductions, descriptions of the instruments (telescopes), calibrations, assumptions, and results. Graphs and tables of counts of penetration, both total and in sectors of heliocentric distance are provided. Plots of number vs particle size distributions are given. Appendix tables give the data measured by the Asteroid/Meteoroid Detector (AMD). Table C.1 gives event number, day of year, sector, bandwidth, entrance time (bits) and exit time (bits) for each of the four telescopes on Pioneer 10. Table C.2 gives backgrounds and peak signals for events measured by the AMD on Pioneer 10. Columns include event number, day of year, sector, bandwidth, background (bits) and peak signals (bits) for each of the four telescopes on Pioneer 10. Tables C.3 and C.4 give the same quantities for the Pioneer 11 telescopes as are in C.1 and C.2 respectively for Pioneer 10. Appendix E contains tables of particle concentrations in the pre-asteroid belt region, and asteroid belt region sectors for Pioneers 10 and 11 in separate tables. Other appendices contain trial computer simulation of analysis procedure, and calculation and tabulation of gegenschein brightness. A table (H-1) gives the gegenschein brightness as a function of heliocentric distance in AUs. Copies of several articles of analysis and results of these experiments are appended.

PIONEER 11, VAN ALLEN
JOVIAN CHARGED PARTICLES

Data set name - JUPITER ENCOUNTER PROTON AND
ELECTRON COUNT RATES ON TAPE

NSSDC ID 73-019A-11A, PION-11 JUPITER ENCOUNTER TAPES

Time period covered - 11/19/74 TO 12/12/74
(As verified by NSSDC)

Quantity of data - 7 REELS OF TAPE

This data set contains Jupiter-encounter, particle count-rate data written at 800-bpi on 7-track, binary (odd-parity) magnetic tapes by a UNIVAC 418 computer. Each tape contains a single file composed of a number of 695-word (18-bit words) records. Each record contains spin-averaged rates for each channel and 23 frame-by-frame rates for each channel together with the corresponding spacecraft roll angles. The angular resolution is about 7 deg, and two records are required for complete angular coverage. Each record contains time and spacecraft-trajectory information and the spacecraft position and orientation in Jovian system-III coordinates. A malfunction of the standby data processor caused an appreciable (up to 30%) error in two of the seven nonredundant count-rate channels for a period of about 3 days following periapsis. Further details are provided in documentation accompanying the data set.

Data set name - SATURN ENCOUNTER-CHARGED PARTICLES

NSSDC ID 73-019A-11B, SATURN ENC.-CHARGED PARTICLES

Time period covered - 08/30/79 TO 09/05/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These charged particle data from the Saturn encounter were supplied by the experimenter on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 418 computer. Each 5184-byte record consists of a time cluster, three data matrices containing particle count rates (angular), spin-averaged count rates, and raw data, a corresponding magnetic field matrix containing helium vector magnetometer data, trajectory data on spacecraft position, and an angle matrix containing spacecraft roll angles. The 140-item particle count rate array consists of 14 angular bins for each of 10 detector rates. Various combinations of detectors yield information on 0.04 to 21 MeV electrons and 0.61 to 77.5 MeV protons; 0.55 to 21 MeV electrons and 6.6 to 77.5 MeV protons; electrons above 21 MeV and protons above 77.5 MeV; and electrons above 0.06 MeV. The data cover 6 days which bracket the closest approach to Saturn. Count rates have been corrected for dead time using the methods described in J. Geophys. Res. (v. 85, 1980, pp. 5679-5694). This article also discusses problems associated with the identification of individual particle species.

Data set name - ONE HOUR CRUISE AVERAGES ON MAGNETIC TAPE
(*)

NSSDC ID 73-019A-11C, ONE HOUR CRUISE AVERAGES

Time period covered - 04/06/73 TO 05/18/82
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These experimenter-supplied, Jovian charged particle 1-h averaged cruise data are on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 418 computer. Each 1226-byte record contains spacecraft ID; time in year, day, begin and end day fractions; quarter hour number; period (60 min); type of data; number of samples; effective counts; sum of raw counts/0.09375; count rate average (counts/s); standard deviation of count rate; M (Fourier coefficients); K (phase amplitude); phase angle; sum of raw counts; and number of errors. Various combinations of detectors yield information on 5- to 21-MeV electrons, and- 30 to 77.5-Mev protons; 0.55- to 21-MeV electrons, and 6.6- to 77.5- MeV protons; electrons above 31 MeV, and protons above 77.5 MeV; and electrons above 0.06 MeV.

PIONEER 11, WEINBERG
ZODIACAL-LIGHT TWO-COLOR
PHOTOPOLARIMETRY

Data set name - PIONEER 11 STARLIGHT/ZODIACAL LIGHT
EXPERIMENT DATA ON MAGNETIC TAPE

NSSDC ID 73-019A-15A, STARLIGHT/ZODIACAL LIGHT EXPER

Time period covered - 05/28/74 TO 09/24/74
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This magnetic tape data set contains reduced data of photopolarimetric measurements of the brightness of the sky. The tapes are 1600-bpi, 9-track, binary, created on a Univac 1110 computer. The first file is a directory containing two records of tape identification information. There are a variable number of data files each beginning with a header record containing day of year, input tape number, section number (each day's observations of the sky may be broken into as many as eight sections delineated by look angle), start and stop times of observations, ephemeris information, number of stars used to get pointing correction, standard deviation, number of look angles, and look angles included in the section. The data records contain right ascension and declination of center of field of view, elongation angle of sun, blue and red brightness in Experimenter Data Records (EDR) units, declination and right ascension of star, dwell time, and vignetting correction.

********** PIONEER VENUS 1 **********

Data set name - ORBITAL PLOTS ON MICROFICHE
(*)

NSSDC ID 78-051A-00D, ORBIT PLOTS, MFICHE

Time period covered - 12/05/78 TO 03/28/86
(As verified by NSSDC)

Quantity of data - 84 CARDS OF B/W MICROFICHE

This data set consists of microfiche cards of plots of

orbits in X- and Y- coordinates for various orbits of the Pioneer Venus Orbiter, showing the relationship to the planet.

Data set name - ATTITUDE-ORBIT LISTINGS ON MICROFICHE
(*)

NSSDC ID 78-051A-00E, ATTITUDE-ORBIT LISTINGS, MFICHE

Time period covered - 12/05/78 TO 07/17/86
(As verified by NSSDC)

Quantity of data - 527 CARDS OF B/W MICROFICHE

This data set consists of microfiche cards of tables of ephemeris orbital information for the Pioneer Venus Orbiter. Parameters listed are date, time, altitude, vectors X, Y, Z, in km/s; Venus and earth vector radii in AU; earth-to-Venus longitude in degrees; transformation matrices; and shock normal in X, Y, and Z coordinates. This data set also contains data for 78-051A-12D.

Data set name - IONOPAUSE AND BOWSHOCK CROSSINGS TIMES AND LOCATIONS

NSSDC ID 78-051A-00F, IONOPAUSE,BOWSHOCK CROSS TIME,LOC

Time period covered - 12/05/78 TO 11/19/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, ionopause and bowshock crossing times and locations data are on 9-track, 1600-bpi, ASCII magnetic tape created on a DEC 11/70 computer. They were submitted by L. H. Brace, the principal investigator on the Electron Temperature (Langmuir) Probe experiment. From analysis of his Langmuir Probe data, these crossings were identified in the spacecraft ephemeris data. There are two files of logical records of 120 characters in length grouped together in blocks of 1200 bytes. The crossings are identified from 1978 day 329 through 1981 day 323. The first file contains the ionopause inbound and outbound crossings data which include orbit number, date (year and day of year), time (hours, minutes, and seconds), latitude (above and below equator of Venus), altitude (kilometers above average surface of Venus of 6051 km radius), local solar time (LST) in hours and tenths, measured from anti-solar direction to point of measurement in the equatorial plane of Venus), and solar zenith angle (SZA) measured from the sun to the point of measurement. The second file contains the bowshock inbound and outbound crossings data in the same format. The data for both are for orbits through 1080. This data set is also available in microfilm (78-051A-00G).

Data set name - IONOPAUSE AND BOWSHOCK INBOUND AND OUTBOUND CROSSING TIMES AND LOCATIONS (*)

NSSDC ID 78-051A-00G, IONOPAUSE,BOWS CROSS TIME+LOC FIC

Time period covered - 12/05/78 TO 11/19/81
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of the microfilmed printout listings from data set 78-051A-00F. The listings are of the ionopause and bowshock inbound and outbound crossings time and location. These were identified in the spacecraft ephemeris data from analyses of the Electron Temperature (Langmuir) Probe Experiment (OETP) by its principal investigator, L. H. Brace. The listings, in the same format for both ionopause and bowshock crossings give the orbit number, date (year, and day of year), time (hours, minutes, and seconds), latitude (above or below the equator of Venus), altitude (kilometers above the average surface of Venus of 6051 km radius), local solar time (LST) in hours and tenths measured from the anti-solar direction to the point of measurement in the equatorial plane of Venus, and solar zenith angle (SZA) measured from the sun to the point of measurement.

PIONEER VENUS 1, BARNES
SOLAR WIND PLASMA ANALYZER (OPA)

Data set name - OPA (SED) DATE AND VELOCITY DATA (ORBIT 1-740) ON MAGNETIC TAPE

NSSDC ID 78-051A-18A, OPA-SED DATE VELOCITY(ORBIT 1-740

Time period covered - 12/05/78 TO 10/21/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Orbiter Plasma Analyzer date and velocity data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data consist of reduced solar wind flow speed (km/s) and proton number density (per cc) observed just before the (first) inbound crossing of the bow shock of Venus, and the same quantities just after the (last) outbound crossing. Those parameters were obtained by a leastquares fit of a convecting isotropic Maxwellian proton velocity distribution, convolved through the instrument response function obtained from laboratory calibration, to the raw currents. The flow speed obtained by this procedure should normally be accurate (conservative error bars would be + or - 10 percent). The proton number density is generally less accurate (conservatively + or - 50 percent). Each file on tape contains data for 31 orbits. Orbit number, times of measurement (hours and minutes UT at the spacecraft), and reduced parameters are given for each orbit. The precise time of measurement refers to the completion of the measurement cycle (approximately 9 minutes) of 45 spin periods. The time is always within 2 measurement cycles of the inferred shock crossing. These data are contained on the Special Events Data (SED) tapes produced by the Unified Abstact Data System (UADS).

Data set name - SOLAR WIND PLASMA ANALYZER DATA, DECEMBER 11, 1978

NSSDC ID 78-051A-18B, PLASMA ANALYZER DATA 12-78

Time period covered - 12/11/78 TO 12/11/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This plasma data is on 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP computer. Each 80-byte card image record contains Ground Received Time (GRT) in day, hour, minutes, and seconds; velocity (km/s); azimuthal angle (deg); polar angle (deg); proton density per cubic centimeter; and temperature (deg K). These data are on the Composite Data (CD) tape, which contains data from many experiments created by the Unified Abstract Data Systems (UADS). These data cover seven orbits on Dec. 11, 1978.

Data set name - SOLAR WIND PLASMA (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-18C, SOLAR WIND PLASMA (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

PIONEER VENUS 1, BRACE
ELECTRON TEMPERATURE PROBE (OETP)

Data set name - ELECTRON TEMPERATURE AND DENSITY (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-01A, ELECTRON TEMP DENSITY (UADS-LFD)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a

readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

Data set name - CD OBSERVED IONOPAUSE LOCATIONS DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-01B, CD OBSERVED IONOPAUSE LOCATIONS

Time period covered - 12/05/78 TO 08/07/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, observed ionopause locations data are on 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP IV computer. Each logical record contains the orbit number; periapsis date and time in hours, minutes, and seconds; seconds of day; latitude; longitude; altitude; and solar zenith angle for both the inbound and outbound crossings. These data are contained on the Composite Data (CD) tape produced by the Unified Abstract Data System (UADS).

Data set name - PIONEER VENUS ORB. ELECTRON TEMPERATURE AND DENSITY PROBE,12-S,(UADS-LFD) (*)

NSSDC ID 78-051A-01C, 12-S ELEC TEMP DENSITY (UADS-LFD)

Time period covered - 12/06/78 TO 02/18/84
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of one tape containing data of the Orbiter Electron Temperature Probe (OETP) aboard the Pioneer Venus Orbiter. This is the revised data set replacing the OETP input on the 10 UADS-LFD tapes ($ID=78-051A-01A). It was written in the Unified Abstract Data System (UADS)-Low Frequency Data (LFD) format on a PDP 11/70: 9 track, unlabelled, 1600-bpi, ASCII-coded magnetic tape. The first three records on the tape describe: (1)the measured parameters, (2)the format used and (3)the fill values. With the foregoing, the data records beginning with record #4 can be read to the end of the file. Each data record contains date (1978339), time (milliseconds), orbit number, time tag (from -1800 to +1800 in increments of 12), electron temperature (deg. K) electron density (cm-3), and spacecraft potential (V). The values were derived by taking a time weighed average of all measurements within the 12 sec of each UAD sample time. In general, the errors are believed to be less than 10%. Bad values were identified and deleted.

PIONEER VENUS 1, CROFT
GAS-PLASMA ENVIRONMENT-DUAL FREQUENCY EXPERIMENT (OGPE)

Data set name - GAS AND PLASMA ENVIRONMENT SIGNAL STRENGH LISTS

NSSDC ID 78-051A-03G, GAS+PLASMA ENVIR.SIGS STRENGTH LT

Time period covered - 12/12/78 TO 11/28/79
(As verified by NSSDC)

Quantity of data - 4 REELS OF MICROFILM

This data set consists of reduced data of signal strength for various orbits of Pioneer Venus 1 Orbiter around Venus that are used for analysis for the Gas and Plasma Environment experiment. These are NSSDC-microfilmed data from the original 12 working notebooks of tape printouts used by the principal investigator. Information contained in the listings is the following: (1) spacecraft number, (2) orbit number with entry or exit indicated, (3) ground station synthesis frequency, (4) downlink frequency, (5) time after midnight in seconds, (6) S-3x after bias removed, in Hertz, (7) ray asymptote, (8) binding ray, (9) spacecraft radial distance, (10) signal strength, (11) refractivity, (12) sun vectors X, Y, Z, in kilometers, (13) day of year in h, min, s, (14) S-frequency and S-residual, and (15) X-frequency and X-residual.

PIONEER VENUS 1, EVANS
GAMMA BURST DETECTOR (OGBD)

Data set name - OGBD SOLAR EVENTS DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-05A, OGBD SOLAR EVENTS

Time period covered - 06/07/80 TO 06/29/80
(Date supplied by experimenter)

Quantity of data - 1 REEL OF TAPE

This data set, obtained from the experimenter, consists of a 9-track, 1600-bpi, CDC 6600 magnetic tape. It contains Pioneer Venus Orbiter Gamma-Ray Burst Detector flux-rate data in the energy range 60-200 keV for solar flares occurring 1980/06/07, 1980/06/21, and 1980/06/29. The tape contains 11 files, of which the first is an ID file, written in CDC alphanumeric display code, and is 2000 characters in length. The remaining 10 files, which are of variable length, consist of data from individual event responses - one file per response. The first record in each file contains the event date, the Universal Time, the background counting rate, and the flux conversion factor, ergs per sq cm per count, all in CDC alphanumeric display code. The remaining records on each file consist of 400 words each, alternating between the UT in seconds at the start of the data sample and the net flux of the data sample. All of the records beyond the first are written in CDC 60 bit floating point format. The instrument is described in "The Pioneer Venus Orbiter Gamma Burst Detector," R.W. Klebesadel, et. al. IEEE Transactions on Geoscience and Remote Sensing, Vol. GE-18, No.1, January, 1980, pp76-80.

Data set name - OGBD HOURLY AVERAGES ON MAGNETIC TAPE (*)

NSSDC ID 78-051A-05B, OGBD HOURLY AVERAGES

Time period covered - 05/22/78 TO 09/07/83
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, obtained from the experimenter, consists of hourly-averaged data from the Pioneer Venus Orbiter Gamma-Ray Burst Detector. The data are contained on a 9-track, 1600-bpi, VAX 11/780 standard-labeled magnetic tape. The data consist of 29008 logical records, written in ASCII format. The first two entries in each record consist of the date and UT in seconds at the beginning of the data sample. The third entry is the averaged count rate for the entire energy interval, 100-2000 keV. The 4th entry is simply the sum of the 5th through 8th entries, which are the count rates in the energy intervals (in keV) 100-200, 200-500, 500-1000, and 1000- 2000, respectively. The 4th entry is not necessarily the same as the 3rd, because photons occasionally were counted twice, if their energy was near the borderline between two energy intervals. The 3rd through 8th entries all refer to "guarded" count rates; i.e., those which have been adjusted by deleting counts which were also detected by the charged particle scintillation shell. The 9th entry contains the unguarded count rate for counts with energy above 100 keV. The 10th entry contains the count rate for the "trigger reference," used as a baseline for the gamma-ray burst logics. Finally, the 11th entry, which is usually blank, may contain a date referring to the processing date for this data sample.

Data set name - OGBD HOURLY AVERAGES ON MICROFICHE (*)

NSSDC ID 78-051A-05C, OGBD HOURLY AVERAGES-MFICHE

Time period covered - 05/22/78 TO 09/07/83
(As verified by NSSDC)

Quantity of data - 11 CARDS OF B/W MICROFICHE

This microfiche data set was generated at NSSDC from hardcopy provided by the Principal Investigator group. It contains tables of hourly averaged count rates for different energy intervals. Each frame table shows 10 columns with the following headings: date (YY/MM/DD); universal time (s); average count rate for the entire energy interval, 100 to 2000 keV; the sum of the count rates in the energy intervals (in keV) 100 to 200, 200 to 500, 500 to 1000, and 1000 to 2000; counts in the energy interval 100 to 200 keV; counts in the energy interval 200 to 500 keV; counts in the energy interval 500 to 1000 keV; counts in the energy interval 100 to 2000 keV; and finally, count rates for the "trigger reference" used as a baseline for the gamma-ray burst logics.

PIONEER VENUS 1, KEATING
ATMOSPHERIC DRAG (OAD)

Data set name - ATMOSPHERIC DRAG DENSITIES

NSSDC ID 78-051A-19A, ATMOSPHERIC DRAG DENSITIES

Time period covered - 12/09/78 TO 08/07/79
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of data of atmospheric densities determined and tabulated near 16 deg N latitude at altitudes between 140-190 km for all times of the day. Table 1 gives atmospheric drag densities and associated parameters for each orbit in which a measurement could be made. It gives the date (mo/day/yr), orbit number, altitude in km, density in g/cubic cm, the error in determining the density divided by the density, density scale height, exospheric temperature, local solar time in hours, and east longitude in degrees. Table 2 gives the results of the model: i.e., local solar time in hours, altitude in kilometers, density in g/cubic cm, number density of atomic oxygen in atoms/cubic cm, the ratio of the number density of atomic oxygen to that of carbon dioxide, and the temperature in deg K at that altitude. Further explanation of the method of data reduction and model generation can be obtained from the article: "Venus Upper Atmospheric Structure," J. Geophys. Res., v. 85, p. 7941, 1980.

Data set name - OAD (SED) P/V ATMOSPHERIC DRAG MODEL ON MAGNETIC TAPE

NSSDC ID 78-051A-19B, OAD(SED) PV ATM. DRAG MODEL

Time period covered - 12/09/78 TO 08/07/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric drag model data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record contains the local solar time in hours; altitude (km); density (g/cc); number density of atomic oxygen (part/cc); ratio of number densities of O/CO2; and temperature. These data are contained on one file of the Special Events Data (SED) tape produced by the Unified Abstract Data System (UADS).

Data set name - OAD (SED) P/V ATMOSPHERIC DRAG OBSERVATIONS (ORBITS 5-246) ON MAG. TAPE

NSSDC ID 78-051A-19C, OAD(SED) PV ATM DRAG OBS ORBS-246

Time period covered - 12/09/78 TO 08/07/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric drag observations data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record consists of time in month, day of month, and year; orbit number; altitude (km); density (g/cc); error in density/density; scale height (km); exospheric temperature; local solar time in hours; and Venus longitude. The data are contained on one file of the Special Events Data (SED) tape produced by the Unified Abstract Data System (UADS) and contain observations for orbits 5-246.

PIONEER VENUS 1, KLIORE
RADIO OCCULTATION (ORO)

Data set name - S-BAND AND X-BAND RADIO OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-20A, S-BAND,X-BAND RADIO OCCULTATION

Time period covered - 12/05/78 TO 02/27/79
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

These experimenter-supplied, S-band and X-band radio occultation data are on 9-track, 1600-bpi, binary magnetic tape created on a UNIVAC 1100/81 computer. There are 3 types of data files. The first file is a processed data file containing number of data points; spacecraft ID; orbit no.; mode; day of year for orbit; transmitting station no.; receiving Deep Space Station no.; 1-way, 2-way, or 3-way data; band type; ground station frequency; spacecraft downlink frequency; time of sample in year, day of year, and seconds of day; S-band and X-band frequency (Hz); frequency residuals (Hz), and power (dBm). The second file contains ionospheric data consisting of the same identifying information as in the processed data file plus radius (km) at which latitude and solar zenith angle are defined; time (seconds past midnight); closest approach distance of ray from center of planet; asymptotic ray distance (km); range from spacecraft to center of planet; electron density; refractive bending angle; refractivity; signal level (dBm); and latitude and solar zenith angle at closest approach distance. The third file consists of temperature, pressure, and refractivity data as a function of radial distance.

PIONEER VENUS 1, KNUDSEN
RETARDING POTENTIAL ANALYZER (ORPA)

Data set name - PLASMA PARAMETER (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-07A, PLASMA PARAMETER (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

PIONEER VENUS 1, NIEMANN
NEUTRAL MASS SPECTROMETER (ONMS)

Data set name - NEUTRAL GAS COMPOSITION (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-11A, NEUTRAL GAS COMP (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (18C). They will be described identically under each ID.

Data set name - ONMS VENUS SUMMARY LOW FREQUENCY DATA ON MAGNETIC TAPE (*)

NSSDC ID 78-051A-11B, ONMS VENUS SUMMARY, LOW FREQ DATA

Time period covered - 12/24/78 TO 08/13/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, provided by the principal investigator, contains 19 months of neutral composition and density data obtained in the upper atmosphere of Venus. This data set is on a 9-track, 1600 bpi, ASCII magnetic tape created on a DEC PDP 11/70 computer. Concentration of CO2, CO, N2, O, N, and He are given as a function of universal time (in milliseconds of day) over an altitude range of approximately 150 to 300 km. Positional parameters of the spacecraft are also included and provide the altitude over the mean surface of Venus, the latitude on the surface of Venus, the local solar time, and the solar zenith angle. Comprehensive documentation for this data set, including a detailed description of the tape, is available from NSSDC. A discussion of the acquired data, the reduction to meaningful composition, and examples of the composition and temperature of the thermosphere/exosphere for the first Venus diurnal cycle is given in "Mass Spectrometric Measurements of the Neutral Gas Composition of the Thermosphere and Exosphere of Venus," J. Geophys. Res., 85, 7817 (1980).

PIONEER VENUS 1, PETTENGILL
RADAR MAPPER (ORAD)

Data set name - TOPOGRAPHIC MAPS

NSSDC ID 78-051A-02A, TOPOGRAPHIC MAPS

Time period covered - 05/28/80 TO 05/28/80
(As verified by NSSDC)

Quantity of data - 1 B/W PRINT

This data set consists of an 8- X 10-inch negative of a preliminary topographic map of the surface of Venus. Contour interval is 1 km and all elevations refer to a radius of 6045 km for Venus. Some features are designated.

Data set name - RADAR MEASUREMENT (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-02B, RADAR MEASUREMENT (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B) and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

Data set name - RADAR ALTIMETRY OF CRUST-FIXED LAT + LONG DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-02C, RADAR ALTIM. COMPOSITE DATA

Time period covered - 12/05/78 TO 09/01/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, radar altimeter composite data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each file of data consists of 80-byte logical records arranged in 8 different arrays. The first 5 arrays are fixed length (either 1000 double-precision floating point fields or 1000 16-bit integer fields), and each fits exactly into an integral number of logical records. The remaining 3 arrays are of varying length. The arrays consist of the following: periapsis times (ms) counting from midnight December 30/31 of the previous year; semi- major axes of the osculating orbital ellipse at periapsis (km); eccentricity of the osculating orbital ellipse at periapsis; data source codes; data editing levels (no. of times the data have been processed by the editing system); 7 sub-arrays of altimetry data consisting of crust-fixed latitudes and longitudes; planetary radius; Hagfors scattering law parameter (C); Fresnel reflection coefficient; spacecraft radial velocity (km/s); and orbit number and roll number relative to periapsis; and latitude and longitude pointer arrays that index the altimeter data arrays, used to reference the data in the altimeter data section by increasing the value of the crust-fixed latitudes and longitudes. These data are on the Composite Data (CD) tape (which contain data from many experiments) created by the Unified Abstract Data System (UADS).

Data set name - ALTIMETRIC AND RADIOMETRIC, LOW FREQUENCY DATA ON MAGNETIC TAPE (*)

NSSDC ID 78-051A-02D, ALTIMETRIC & RADIOMETRIC, LFD

Time period covered - 12/08/78 TO 03/19/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, provided by the principal investigator, contains the final altimeter and radiometer data from the Radar Mapper instrument. The data set is on a 9-track, 1600 bpi, ASCII magnetic tape created on an IBM 370 computer. The tape contains 2 files. The first file contains 15 parameters of periapsis orbital data. The second file contains 25 parameters related to the radar and radiometer measurements. Some of the parameters on the second file are the date and time of the observations, the latitude and longitude of the measurements, the radiometer voltage reading, the radiometer background reading, the planet brightness temperature, the planetary radius measured by the altimeter, the formal error of the measurements, and various correlation coefficients. Comprehensive documentation for this data set, including a detailed description of the tape, is available from NSSDC. A discussion of the measurements is given in "Pioneer Venus Radar Results: Altimetry and Surface Properties," J. Geophys. Res., 85, 8261 (1980).

PIONEER VENUS 1, PHILLIPS
INTERVAL DENSITY DISTRIBUTION (OIDD)

Data set name - LINE-OF-SIGHT ACCELERATION PLOTS AND LISTINGS

NSSDC ID 78-051A-23A, LINE-OF-SIGHT ACCL PLOTS + LIST

Time period covered - 03/01/79 TO 08/30/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of microfilmed tables and plots of the line-of-sight gravity data obtained by using the Radio Occultation Experiment data. Tabular data include periapsis orbital number, time, residuals, altitude, latitude, longitude, fit, acceleration, ratio of residuals to fit, and radius vector. Plots show instantaneous rates in seconds vs time in minutes past epoch for periapsis passes.

Data set name - HIGH RESOLUTION ACCELERATION GRAVITY DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-23B, GRAVITATIONAL ACCELERATION DATA

Time period covered - 12/09/79 TO 08/29/80
(As verified by NSSDC)

Quantity of data - 5 REELS OF TAPE

These experimenter-supplied, gravitational acceleration data are on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 1100 computer. The records are 80-byte card images. The first record in a data group contains periapsis number;

year; month; day of month; hour of day; and minute; and earth longitude, latitude, and distance. Each successive record contains spacecraft latitude, spacecraft longitude, line-of-sight acceleration in millimeters/second squared and altitude of spacecraft (in km).

Data set name - VENUS GRAVITY: ANALYSIS OF BETA REGIO

NSSDC ID 78-051A-23C, VENUS GRAVITY AT BETA REGIO

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set, taken from the paper by Esposito, P.B., et al., in Icarus, v. 51, pp. 448-459, 1982, which presents results using analyzed radio tracking data acquired over Beta Regio. Plots of (1) converged Doppler residuals from orbit P566, (2) vertical gravity maps using different masses of disks, (3) Doppler residuals of orbit 566 from 191 surface disk masses, and (4) vertical gravity map due solely to topography, are given. Appendices give the solutions for the two different masses chosen (94 and 191).

Data set name - GRAVITY FIELD OF VENUS: A PRELIMINARY ANALYSIS

NSSDC ID 78-051A-23D, GRAV.FIELD OF VENUS,PRELIM.ANAL.

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set consists of the analyzed data from the line-of-sight accelerations (LOS) obtained from the radio tracking data on the Orbiter of Pioneer Venus. The published plots (Phillips, R. J., et al., Science, v. 205, pp. 93-96, 1979) were obtained from the data in data set 78-051A-23B. This data set presents (1) plots of LOS profiles from orbits 92-98 acquired March 6 through 13, 1979, at periapsis altitudes varying from 156-161 km, (2) depth of compensation, (3) gravity spectra for Venus and earth, and (4) gravitational potential power spectra for Venus, earth, moon, and Mars.

Data set name - GRAVITY ANOMALIES ON VENUS

NSSDC ID 78-051A-23E, GRAVITY ANOMALIES ON VENUS

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set is taken from the paper by W. L. Sjogren, et al., (J. Geophys. Res., v. 85, pp. 8295-8302, 1980) which used analyzed data obtained from the Doppler radio tracking which provided gravity measures over a significant portion of Venus. The resolution obtained is about 300-1000 km in area from 10 deg S to 40 deg N latitude and 70 deg W to 130 deg E longitude. The data are presented in graphs and tables, showing correlations of gravity with topography, and atmospheric effects on the orbital period. Typical Doppler residuals are also presented as well as topographic models simulation results.

Data set name - VENUS GRAVITY ANOMALIES AND CORRELATIONS WITH TOPOGRAPHY

NSSDC ID 78-051A-23F, GRAVITY ANOM. CORREL. WITH TOPOG.

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set, taken from the paper by W. L. Sjogren, et al., J. Geophys. Res., v. 88, pp. 1119-1127, 1983, presents the analyzed results from the Pioneer Venus Orbiter radio tracking data. It gives plots of (1) typical Doppler residuals with spline fit for orbit 557, (2) line-of-sight (LOS) gravity contours 5 mgals apart superposed on a topographic map at 150 km altitude, 15 deg N latitude and at 800 km altitude at 50 deg N and 20 deg S latitude, (3) LOS accelerations from topography data calculated at spacecraft altitude assuming density at 2.7g/cu cm with 20 mgals contours, (4) LOS Bouguer gravity, (5) ratio plots of LOS gravity due to topography vs observed LOS gravity, (6) singular points for vertical gravity map, (7) vertical gravity contours at 200 km altitude derived from LOS gravity, (8) vertical gravity at 200 km altitude, derived from topography, and (9) vertical Bouguer gravity at 200 km altitude.

Data set name - LINE-OF-SIGHT DATA ON MAGNETIC TAPE (*)

NSSDC ID 78-051A-23G, LINE-OF-SIGHT DATA ON TAPE

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

These data are archived at the Jet Propulsion Laboratory and not at NSSDC. They may be obtained from JPL through Roger Craig. These data are line-of-sight (LOS) data on tape. They include various map values for 2- X 2-degree squares. Each raw observation is a 6-vector value in Venus-centered coordinates including latitude, longitude, and altitude of the spacecraft; and latitude, longitude and amplitude of the LOS acceleration.

PIONEER VENUS 1, RUSSELL
MAGNETOMETER (OMAG)

Data set name - 24 SECOND AVERAGED (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-12A, 24 SEC AVGD DATA (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

Data set name - CD 32 SECOND TOTAL MAGNETIC FIELD DATA ON TAPE

NSSDC ID 78-051A-12B, CD 32 SEC. TOTAL MAG FIELD DATA

Time period covered - 04/04/79 TO 06/03/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 32-second averaged total magnetic field data are on 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP IV computer. The data are averaged magnetic field strength over two major telemetry frames. The time tag (hour, minutes, and seconds) is for the center of the averaging interval. These data are contained on 15 files on the Composite Data (CD) tape created by the Unified Abstract Data System (UADS). The data were originally produced on an IBM 360 computer in EBCDIC but were converted to ASCII to facilitate processing.

Data set name - CD 32 SEC MERGED MAGNETIC AND PEAK ELECTRIC FIELD DATA ON TAPE

NSSDC ID 78-051A-12C, CD 32 SEC MRG MAG + PEAK ELEC FLD

Time period covered - 06/08/79 TO 08/08/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 32-second averaged merged total magnetic field and peak electric field data are on 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP IV computer. Each logical record contains Universal Time (UT) in hours, minutes, and seconds; averaged total magnetic field strength; and peak electric field measurements in millivolts per meter per root Hertz for 100, and 730 Hertz, and for 5.4 and 30 kilohertz. These data are contained on 59 files on the Composite Data (CD) tape created by the Unified Abstract Data

System (UADS). The data were originally produced on an IBM 360 computer in EBCDIC but were converted to ASCII to facilitate processing.

Data set name - SEDR LISTINGS OF EPHEMERIS DATA (*)

NSSDC ID 78-051A-12D, SEDR LIST OF EPHEMERIS DATA

Time period covered - 03/05/82 TO 07/23/83
(As verified by NSSDC)

Quantity of data - 95 CARDS OF B/W MICROFICHE

This data set consists of tables of ephemeris data for the magnetometer experiment on Pioneer Venus 1 Orbiter. The parameters listed include date, day of year, time, altitude, X, Y, Z velocity vectors, distance in astronomical units (AU), earth-Venus longitude, and transformation matrices from VSS to VSO coordinates. Starting data are in the same data set as 77-051A-00E.

Data set name - HIGH-RESOLUTION, 12 SEC AND 2 MIN B AND E PLOTS ON MICROFICHE (*)

NSSDC ID 78-051A-12E, HI-RES, 12-S, & 2-MIN B & E PLOTS

Time period covered - 12/05/78 TO 09/05/84
(As verified by NSSDC)

Quantity of data - 1052 CARDS OF B/W MICROFICHE

This data set consists of summary plots from the Pioneer Venus Orbiter magnetometer and electric field detector instruments, on monochrome microfiche cards. The first panel on each card contains a 24-h time series of the vector magnetometer data with the three Cartesian components in the spacecraft coordinate system and the total field strength given in gammas. The time resolution of the data is 1 min. Calibration and telemetry spikes are common, but easily recognized. The second panel plots 2-min peak values and average values for the spectral amplitudes in each channel of the electric field detector: 30 kHz, 5.4 kHz, 730 Hz, and 100 Hz. The third plot gives 1-min averages of the electric field phase in the 5.4 kHz channel, together with the number of points used in the computation of the magnetic field and the standard deviations of the magnetic field (components and total). The fourth panel gives engineering and ephemeris information, including instrument temperatures and spacecraft altitude and solar zenith angle. The next three panels include the highest resolution magnetometer and electric field data for the 18 min on either side of periapsis. The final 24 panels on each card are alternating 2-h summaries of the 24-s average magnetic and electric fields.

Data set name - 12-SEC B + E FIELD, PERIAPSIS DATA (VENUS IONOSPHERE) ON MAGNETIC TAPE. (*)

NSSDC ID 78-051A-12F, 12-S B+E FIELD, PERIAPSIS

Time period covered - 12/05/78 TO 05/28/84
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

This data set consists of 9-track tapes. The tapes are ASCII, 1600-bpi and were created in a fixed-length, blocked-record format. There are 500 files per tape. Each file contains 8 physical records (or blocks), which are 6080 bytes long. Each physical record contains 38 logical records, which are 160 bytes long. The logical records are arranged as follows: record 1 - data headers; record 2 - FORTRAN format; record 3 - data fill examples; records 4 to end - time, orbit, time of perihelion, data. Each file contains data for one orbit in a 2-h period about periapsis. The data are 24 s averages taken 12 s apart. Record 1 lists types of data recorded. Magnetic field values, expressed as gammas, are given in the order X, Y, and Z components, total field, standard deviation of components, and standard deviation of total field. The Venus Solar Orbital coordinate system is used, in which the X direction points toward the sun, the Z direction is normal to the orbital plane of Venus, and the Y direction is in the orbital plane pointing opposite to the direction of orbital motion. Electric field data are given in maximum and average values for each of the following frequencies: 100 Hz, 730 Hz, 5.4 kHz, and 30 kHz in units of volts/(m*Hz**1/2). Calibration pulses occur once per day and are readily recognized. Telemetry spikes are also present on occasion.

Data set name - 2-MINUTE OVERLAPPED AVERAGED DATA TAKEN EVERY MINUTE ON MAGNETIC TAPE (*)

NSSDC ID 78-051A-12G, 2-MIN OVERLAPPED AVG,EVERY MIN.

Time period covered - 12/06/78 TO 09/30/84
(As verified by NSSDC)

Quantity of data - 24 REELS OF TAPE

This data set consists of 9-track tapes in a fixed-length, blocked-record format. The data are stored at 1600-bpi in ASCII, with a blocking factor of 30 logical records per block and 260 bytes per logical record. The first block contains data headers, the FORTRAN format, and data fill. Each file contains 24 h of data. The data set contains 2-min overlapped averages, with 1-min centers, of the magnetometer and electric field sensor experiments. Also included are spacecraft position and attitude data. Using the Venus Solar Orbital (VSO) coordinate system, magnetic field Cartesian components are given, together with the total field, standard deviations of components, and standard deviation of total field. In the VSO coordinate system, the X direction points toward the sun, the Z direction is normal to the orbital plane of Venus, and the Y direction is in the orbital plane, pointing opposite to the direction of orbital motion. Electric field data are given in maximum and average values for each of the following frequencies: 100 Hz, 730 Hz, 5.4 kHz, and 30 kHz in units of volts/(m*Hz**1/2).

PIONEER VENUS 1, SCARF
ELECTRIC FIELD DETECTOR (OEFD)

Data set name - 24 SECOND AVERAGED (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-13A, 24 SEC AVGD DATA (UADS-LFD FILE)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B) and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

Data set name - CD 32 SEC MERGED MAGNETIC AND PEAK ELECTRIC FIELD DATA ON TAPE

NSSDC ID 78-051A-13B, CD 32 SEC MRG MAG + PEAK ELEC FLD

Time period covered - 06/08/79 TO 08/08/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, 32-second averaged merged total magnetic field and peak electric field data are on 9-track, 1600-bpi, ASCII magnetic tape created on the MODCOMP IV computer. Each logical record contains Universal Time (UT) in hours, minutes, and seconds; averaged total magnetic field strength; and peak electric field measurements in millivolts per meter per root Hertz for 100 and 730 Hertz, and for 5.4 and 30 kilohertz. These data are contained on 59 files on the Composite Data (CD) tape created by the Unified Abstract Data System (UADS). The data were originally produced on an IBM 360 computer in EBCDIC but were converted to ASCII to facilitate processing.

Data set name - HIGH-RESOLUTION, 12 SEC AND 2 MIN B AND E PLOTS ON MICROFICHE (*)

NSSDC ID 78-051A-13C, HI-RES, 12-S, & 2-MIN B & E PLOTS

Time period covered - 12/05/78 TO 09/05/84
(As verified by NSSDC)

Quantity of data - 1052 CARDS OF B/W MICROFICHE

This data set consists of summary plots from the Pioneer Venus Orbiter magnetometer and electric field detector instruments, on monochrome microfiche cards. The first panel on each card contains a 24-h time series of the vector magnetometer data with the three Cartesian components in the spacecraft coordinate system and the total field strength given in gammas. The time resolution of the data is 1-min. Calibration and telemetry spikes are common, but easily recognized. The second panel plots 2-min peak values and average values for the spectral amplitude in each channel of the electric field detector: 30 kHz, 5.4 kHz, 730 Hz, and 100 Hz. The third plot gives 1-min averages of the electric field phase in the 5.4 kHz channel, together with the number of points used in the computation of the magnetic field and the standard deviations of the magnetic field (components and total). The fourth panel gives engineering and ephemeris information, including instrument temperatures, spacecraft altitude, and solar zenith angle. The next three panels include the highest resolution magnetometer and electric field data for the 18-min on either side of periapsis. The final 24 panels on each card are alternating 2-h summaries of the 24-s average magnetic and electric fields.

Data set name - 2-MINUTE OVERLAPPED AVERAGED DATA TAKEN EVERY MINUTE ON MAGNETIC TAPE. (*)

NSSDC ID 78-051A-13D, 2-MIN OVERLAPPED AVG,EVERY MIN.

Time period covered - 12/06/78 TO 09/30/84
(As verified by NSSDC)

Quantity of data - 24 REELS OF TAPE

This data set consists of 9-track tapes created in a fixed-length, blocked-record format. The data are stored at 1600-bpi in ASCII, with a blocking factor of 30 logical records per block and 260 bytes per logical record. The first block contains data headers, the FORTRAN format, and data fill. Each file contains 24 h of data. The data set contains 2-min overlapped averages, with 1-min centers, of the magnetometer and electric field sensor experiments. Also included are spacecraft position and attitude data. Using the Venus Solar Orbital (VSO) coordinate system, magnetic field Cartesian components are given, together with the total field, standard deviations of components, and standard deviation of total field. In the VSO coordinate system, the X direction points toward the sun, the Z direction is normal to the orbital plane of Venus, and the Y direction is in the orbital plane, pointing opposite to the direction of orbital motion. Electric field data are given in maximum and average values for each of the following frequencies: 100 Hz, 730 Hz, 5.4 kHz, and 30 kHz in units of volts/(m*Hz**1/2).

PIONEER VENUS 1, SHAPIRO
CELESTIAL MECHANICS (OCM)

Data set name - HIGH-RESOLUTION VENUS GRAVITY DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-21A, HIGH-RESOLUTION VENUS GRAVITY DAT

Time period covered - 04/25/79 TO 05/28/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These high resolution Venus gravity data are on 9-track, 1600-bpi, EBCDIC magnetic tape created on an IBM 4341 computer. The tape contains 6 files. Files 1 and 2 contain the Venus gravity data (surface mass density in units of nano-planet masses per square degree). The first file was created by the FORTRAN program found in file 3 and listed by the FORTRAN program in file 4. These programs read and write the tape under Format control. This card image form of the data is more convenient for users who use non-IBM type systems. The second file, which contains the same information as the first file was written and listed by the FORTRAN programs in files 5 and 6, respectively. These programs do unformatted reads and writes. File 2 is best suited for users with IBM-compatible systems.

Data set name - GRAVITATIONAL POTENTIAL MODEL OF BETA REGIO ON MAGNETIC TAPE

NSSDC ID 78-051A-21B, GRAVIT POTENTIAL MODEL BETA REGIO

Time period covered - 04/25/79 TO 05/28/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data consist of a model of the gravitational potential of Venus in the vicinity of Beta Regio. The data are on a 9-track, 1600-bpi, EBCDIC magnetic tape created on an IBM 4341 computer. The Venus surface-density data (in units of nano-planet masses per square degree) are contained on 2 files. The first file was written and listed by the FORTRAN programs contained in files 3 and 4 of data set -21A. This card image form of the data is more convenient for users with non-IBM-compatible systems. The second file, which contains the same information as the first file, was written and listed by the FORTRAN programs in files 5 and 6 of data set -21A. These programs do unformatted reads and writes. File 2 is best suited for users with IBM-compatible systems.

PIONEER VENUS 1, STEWART
PROGRAMMABLE ULTRAVIOLET SPECTROMETER
(OUVS)

Data set name - FALSE COLOR IMAGES

NSSDC ID 78-051A-15A, FALSE COLOR IMAGES

Time period covered - 05/29/79 TO 05/29/79
(As verified by NSSDC)

Quantity of data - 4 B/W NEGATIVE FRAMES

This data set is composed of color negatives and positives in false colors of the whole disk and limb of Venus in ultraviolet (UV) from the Ultraviolet Experiment on Pioneer Venus 1-Orbiter. These show the variations in UV over the surface of Venus. The landing areas of the four Probes (Large, and three Small Probes), the equator, and the terminator as well are superimposed on some photos. These photos are part of the Press Release photos from the Pioneer Venus mission.

Data set name - AIRGLOW MEASUREMENT (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-15B, AIRGLOW MEASUREMENT (UADS-LFD)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12-s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

PIONEER VENUS 1, TAYLOR
INFRARED RADIOMETER (OIR)

Data set name - ORBITER INFRARED RADIOMETER RADIANCE DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-16A, OIR RADIANCE DATA

Time period covered - 12/12/78 TO 02/14/79
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These Orbiter infrared radiometer data are on 9-track, 1600bpi, binary magnetic tape created on a SEL 32/35 computer. The data for each orbit are contained in 3 files with a variable number of orbits per tape. File 1 is a 15word header containing orbit number, year, month, and day of orbit periapsis; start and stop times in spacecraft UT (ms); periapsis time (ms); version number of tape; and year, month, and day of precursor tape generation and radiance data tape generation. File 2 contains 155 words of geometry and calibration data. File 3 contains 150 record groups (bins) consisting of a header record and multiple data records. The 4-word header contains no. of soundings in the bin and upper limit latitude, maximum and minimum longitude in the bin (Aries/ecliptic). Each 17-word data record consists of 8-bit data numbers for channels 1-8; polynomial-corrected and power law-corrected data numbers for channels 1-8; latitude and longitude (Venus body-fixed and solar fixed); cosine of angle between local normal and direction to spacecraft and sun; cosine of the azimuth difference in the plane of the local horizontal between vector pointing to the spacecraft and vector pointing to the sun; semi-major and minor axis of ellipse; Aries/ecliptic longitude and latitude of the radiometer look vector; Venus surface to viewed point distance; line-of-sight velocity of spacecraft; time of sounding (ms relative to periapsis); and a data quality indicator.

Data set name - COMPUTER ENHANCEMENT OF THERMAL EMISSION

NSSDC ID 78-051A-16B, COMP ENHANCMNT OF THERMAL EMISSON

Time period covered - (N/A)

Quantity of data - 1 B/W NEGATIVE FRAME

This data set consists of two color images of part of Venus' northern hemisphere obtained by the infrared radiometer on December 1978. The white cross at the center marks the north pole. The frames give the intensity of the thermal emission from the planet's atmosphere, showing both the day and night sides.

Data set name - CD ZONAL AIM TEMPERATURE VS LATITUDE DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-16C, ZONAL AIR TEMP. VS LATITUDE

Time period covered - 12/08/78 TO 01/13/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, zonal air temperature versus latitude data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each record contains latitude, channel 2 temperature (at 90 km), channel 3 temperature (at 80 km), and channel 4 temperature (at 70 km). Each physical block of 80 bytes contains 5 logical records. All numbers are 32-bit integers and have been multiplied by 100. These data are on the Composite Data (CD) tape (which contains data from many experiments) created by the Unified Abstract Data System (UADS).

PIONEER VENUS 1, TAYLOR, JR.
ION MASS SPECTROMETER 1-60AMU (OIMS)

Data set name - 12 SECOND AVERAGED ION DENSITY (UADS-LFD FILE) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-17A, 12 SEC AVGD ION DEN (UADS-LFD)

Time period covered - 12/05/78 TO 11/26/81
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These Unified Abstract Data System (UADS), low frequency data are on 9-track, 800-bpi, mixed-mode magnetic tape created on an IBM 360 computer. The first file on each tape provides a readily available description of the data contained in the tape's second and third files. It contains a variable number of 80-character EBCDIC records. File 2 contains status information for the 9 experiment data sets contained on the tape. There is one 266-character EBCDIC record for each orbit included on the tape. The third file consists of a variable number of binary 396-byte logical records. There are 301 logical records per orbit of data. These records contain the processed orbital data centered around periapsis sampled at approximately 12s intervals. The first logical record for each orbit contains the data for all of the instruments' variables sampled at the UT start time specified for the orbit in its status record (file 2). Record 151 contains the variables' data sampled at the time of periapsis, as specified in the orbit's status record. The first 4 bytes of a record act as a key, giving the record's orbit and nominal time relative to periapsis. The tapes contain data for the following experiments data sets: Electron Temp. Probe (-01A), Radar Altimeter (-02B), Retarding Potential Analyzer (-07A), Neutral Particle Mass Spectrometer (-11A), Triaxial Fluxgate Magnetometer (-12A), Electric Field Detector (-13A), UV Spectrometer (-15B), and Ion Mass Spectrometer (-17A), and solar wind plasma analyzer (-18C). They will be described identically under each ID.

Data set name - POSITIVE ION COMPOSITION MEASUREMENTS ON MAGNETIC TAPE

NSSDC ID 78-051A-17B, 12-SEC ION DENSITIES(REPLACES17A)

Time period covered - 12/05/78 TO 05/29/84
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, on 1 unlabeled ASCII-coded, 9-track, 1600 bpi, 1-file tape, was provided by the principal investigator. It was created on a DEC PDP 11/70 computer. The data are from the first 2000 orbits of the Pioneer Venus Orbiter, covering the period from planet encounter (December 1978) to May 1984. It replaces the OIMS entry on the earlier 10 UADS-LFD tapes (78-051A-17A). This tape's first three records name the measured densities, and describe the format used and the fill values. Beginning with record 4, each data record includes the date (1978 339); time (ms); orbit number; time tag (from -1800 to +1800 in increments of 12); and the number densities (number per cc) of 12 individual positive ion species (O, O2, NO, CO2, C, N, H, He, atomic oxygen 18, O2, CO, and N2) in the order described in the first record. The values are derived by taking an average of all measurements within the 12 s of each UADS sample time. Possible error sources are described in document "Documentation for Users".

PIONEER VENUS 1, TRAVIS
CLOUD PHOTOPOLARIMETER

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 78-051A-06A, PRESS RELEASE PHOTOS

Time period covered - 12/13/78 TO 05/28/79
(As verified by NSSDC)

Quantity of data - 17 COLOR NEGATIVE FRAMES

This data set consists of 4- x 5-inch negatives of press release photos that were released for public distribution. Included are photos of Venus' cloud structure and false-color infrared maps showing weather patterns. Captions are included with the images.

Data set name - DIGITAL MAP IMAGES ON MAGNETIC TAPE
(*)

NSSDC ID 78-051A-06B, DIGITAL MAP IMAGES ON MAG TAPE

Time period covered - 12/08/78 TO 11/12/81
(As verified by NSSDC)

Quantity of data - 60 REELS OF TAPE

These Cloud Photopolarimeter Experiment digital map images data are on 9-track, 1600-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The fixed-block 3200-byte records each contain 40 logical records of 80-byte card images. There is one file of data for each map. The first logical record on a file is a header which identifies the polarimeter map number and the year and day of year of acquisition. It is followed by groups of data, one group for each set of three rolls constituting a recoverable polarimeter scan at a given wavelength. Each group is headed by a card image containing year, day of year, time (spacecraft UT), wavelength (270, 365, 550, or 935), gain setting, and the number of card images to follow (one for each sector). The following card images contain intensity, polarimeter (percent), and spacecraft position information.

Data set name - ORBITER CLOUD PHOTOPOLARIMETER IMAGERY
(*)

NSSDC ID 78-051A-06C, OCPP IMAGES

Time period covered - 12/05/78 TO 07/15/79
(As verified by NSSDC)

Quantity of data - 420 B/W NEGATIVE FRAMES

This data set consists of 4- X 5-inch negatives of the nominal mission, full-disk images of Venus obtained from the Cloud Photopolarimeter Experiment (recorded in the near UV), and a magnetic tape of 14 files, (data set 78-051A-06A) each of which contains the digital data for a single OCPP polarimetry map. A draft version of the experiment documentation accompanies the data. The maps are of low resolution at four wavelengths: 270, 365, 550, and 935 nm. The OCPP images were geometrically rectified by bi-linear interpolation of the raw intensity data. There are 2000 X 2500 resolution elements in the negatives, and the full disk diameter is 1600 elements. Frame number is a 4-digit, consecutive (in time order), number, and is found at the bottom, preceded by the word Venus. Also at the bottom, on the same line, are year, day of year, and time (HH MM) UT corresponding to the observation of disk center.

PIONEER VENUS 1, WOO
ATMOSPHERIC AND SOLAR CORONA TURBULENCE
(OTUR)

Data set name - RADIO OCCULTATION ATMOSPHERIC TURBULENCE (MTUR/OTUR) DATA ON MAGNETIC TAPE

NSSDC ID 78-051A-22A, RADIO OCCULT ATM TURBULENCE

Time period covered - 12/13/78 TO 02/05/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, radio occultation atmospheric turbulence data are on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 1108 computer. Each 720-byte record contains the following: satellite and experiment identification (ID); year and day of year of observation; station number of observation; S-band/X-band ID; time between samples (seconds); phaselock loop amplitude estimated time constant; phase-lock loop frequency tracking bandwidth (HZ); year and day of year of first and last samples; total number of points in the file; time of data sample (seconds); and relative amplitude. The data are selected time series of received signal amplitude, with time constants chosen to resolve the very rapid amplitude fluctuations associated with radio scintillations caused by temperature fluctuation/turbulence in the atmosphere of Venus.

********** PIONEER VENUS 2 **********

PIONEER VENUS 2, TAYLOR, JR.
ION MASS SPECTROMETER (BIMS)

Data set name - BIMS DATA, 850-140KM DATA ON MAGNETIC TAPE

NSSDC ID 78-078A-02B, BIMS DATA, 850-140KM DATA ON TAPE

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, ion mass spectrometer data are on 9-track, 1600-bpi, ASCII magnetic tape created on an IBM 3081 computer. Each 36-byte record contains UT time in tenths of seconds, altitude in tenths of kilometers, ion density in ions/cubic cm, and atomic mass units. The tape contains data for masses 1, 2, 4, 12, 14, 16, 28, 30, 32, and 44 for the time interval from 73053 (tenths of a second) to 73300 on day 343 of 1978. This corresponds to the altitude range 850 km down to about 140 km. This was the only range of data retrievable from the Experiment Data Record (EDR) tapes.

PIONEER VENUS 2, VON ZAHN
NEUTRAL MASS SPECTROMETER (BNMS)

Data set name - THE UPPER ATMOSPHERE OF VENUS DURING MORNING CONDITIONS

NSSDC ID 78-078A-03B, UPPER ATM. MORNING CONDITIONS

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 2 PAGES OF UNBOUND HARDCOPY

This data set consists of tables of the measurements resulting from the descent of the Pioneer Venus Bus into the Venusian atmosphere on December 9, 1978. These tables were taken from the paper by Von Zahn, et al. in J. Geophys. Res., v. 85, n. A13, pp. 7829-7840, 1980. Table 1 gives the measured number densities of He, CO2, CO, N2, and CO+N2 at various descending altitudes from 200 to 130 km. Table 2 gives the Morning Side Model for the upper atmosphere of Venus. The columns include model densities of CO2, N2, He, CO, O, and the derived quantities of mass density, mean molecular weight, temperature, pressure, molecular diffusion, and eddy coefficients for various altitudes from 220-100 km.

********** PIONEER VENUS PROBE LRG **********

PIONEER VENUS PROBE LRG, BOESE
INFRARED RADIOMETER (LIR)

Data set name - (LIR) SED-FILE PRE-ENTRY, DESCENT AND ON-BOARD CALIBRATION DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-05A, (LIR) SED PRE, DESC, CALIB DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, pre-entry, descent, and on-board calibration data are on 9-track, 1600-bpi ASCII magnetic tape created on the MODCOMP IV computer. The data consist of Ground Received Time (GRT) in hours, minutes, and seconds; flux measurements (in watts per square meter) for the following micrometer spectral bandpasses: 3 to 160, 6 to 7, 7 to 8, and 8 to 9. The on-board calibration data indicate an increasing signal during the descent phase of the mission. This was due to increasing Probe Bus voltage; the calibration system was not on regular power. This type of change was observed during calibration of the instrument. The last calibration cycle ended two minutes, 18 seconds prior to impact on Venus' surface. These data are contained on the Special Events Data (SED) tape produced by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE LRG, COUNSELMAN
DIFFERENTIAL LONG BASELINE
INTERFEROMETER (DLBI)

Data set name - DLBI CD RELATIVE CRUSTAL AND ATMOSPHERIC VELOCITY COMPONENTS DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-09B, CD REL. CRUSTAL + ATMOS.VEL.COMP

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, relative crustal and atmospheric velocity components data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains time reception of the Probe signal at the Canberra tracking station, expressed as seconds since zero hours UTC December 9, 1978; Cartesian components of the velocity of the Probe relative to the crust of the planet in meters per second; and 2 of the 3 Cartesian components of the velocity of the Probe relative to the ambient atmosphere, in meters per second. These components were derived by theoretical calculation involving the aerodynamic drag, the gravitational, and the inertial forces acting on the Probe. These data are on the Composite Data (CD) tape (which contains data from many experiments) created by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE LRG, CROFT
ATMOSPHERIC PROPAGATION (MPRO)

Data set name - ATMOSPHERIC PROPAGATION SPECTRAL AMPLITUDES

NSSDC ID 78-078D-11A, SPECTRAL AMPS, SIG+NOISE SPECTRA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are processed digital data obtained from the Deep Space Radio telemetry and then supplied to the PI for the Atmospheric Propagation Experiment for the Probes on Pioneer Venus. They are contained in five notebooks labeled 13-17 inclusive. Notebook 13 contains files marked Box 1 through 5 inclusive. These boxes designate the boxes of punched cards that were produced when the PI read the printed lists (from the telemetry) in order to make these digital data manually. In the notebooks they are in printout form. These in turn have been microfilmed and are available from NSSDC in that format. Formats are given early in Notebook 13 where the original lists are included. These are labeled in decibels and are just as the PI received them from NASA-JPL in their original form. Notebooks 14 through 17 are labeled "Probe Spectra" and there is one notebook for each of the four probes (Large, Small 1, Small 2 and Small 3). In each case there is a large body of 1,024 numbers packed together in a 32X32 array of 4-digit codes. Each array represents the spectrum of signal-plus-noise for 10 s as derived by John Armstrong. Each set of four digits gives amplitude in thousandths of decibels. The data are based on the open-loop recordings from Deep Space Station 14. The absolute level is arbitrary. The first value is the Ground Received Time in UT seconds; second value is the amplitude estimate in decibels , and is based on power measured in the in-phase and quadrature channels with the center frequency of the filters guided by a phase lock loop. Next, the date-time group is given, followed by the number of points (1,024) and the bandwidth (1017.5 Hz). On the next line is given the time of year in seconds. Since this data set contains data from each of the four probes noted above, it is listed (and described identically) under each of the NSSDC IDs: 78-078D-11A, 78-078E-07A, 78-078F-07A, and 78-078G-07A. Users of these data are advised to contact John Armstrong at JPL. Results for these data are found in Geophys. Res. Letters, v. 7, n. 7, 521-4, 1980.

Data set name - PROBE SPECTRA OF SIGNAL PLUS NOISE (MPRO)

NSSDC ID 78-078D-11B, PROBE SPECTRA OF SIGNAL + NOISE

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained within the previous data set 78-078D-07A and is described therein.

Data set name - GAS AND PLASMA ENVIRONMENT SIGNAL STRENGTH DATA ON TAPE

NSSDC ID 78-078D-11C, GAS + PLASMA ENVIR. SIGNL STRNGTH

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, gas and plasma environment signal strength data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The data are contained on 10 files and consist of the signal strength from the descending Probes and, in the case of the Day Probe (Sm 3), after landing. The first file is an introduction containing a list of the first few lines from each of the data files together with some comments on their interpretation. Files 2-5 contain California Deep Space Network (DSN) measurements with one point every 10 seconds. The next 4 files contain measurement for the Australian Deep Space Network (DSN) with a point every second. File 10 contains all of the Day Probe (Sm 3) records during the final part of its life on the surface of Venus. Each data record contains UT in hours, minutes, and seconds; and Automatic Gain Control (AGC) in decibels.

PIONEER VENUS PROBE LRG, HOFFMAN
NEUTRAL PARTICLE MASS SPECTROMETER
(LNMS)

Data set name - GAS SAMPLING TABLES,1-15AMU AND 15-208AMU

NSSDC ID 78-078D-06A, GAS SMPLG TBLS,1-15AMU+15-208AMU

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is the complete printout submitted by the principal investigator (PI) on the composition of the Venus atmosphere. It consists of a series of scans of the mass spectrum by stepping the ion-accelerating high voltage between successive mass peak tops under the control of a microprocesser. Columns 1 through 3 give the scan number (1-51), telemetry frame number (15-131), and probe altitude above Venus' surface on each page. The remaining 8 columns are the number of ion counts per integration period (235ms) obtained for each mass peak position (at the head of the column) as a function of scan number (equivalent to altitude). Included in the data set is a paper by Hoffman, J. H., et al., IEEE Trans. on Geosci. and Remote Sens., v. GE-18, n. 1, pp. 80-84, 1980.

PIONEER VENUS PROBE LRG, OYAMA
GAS CHROMATOGRAPH (LGC)

Data set name - SED LOWER ATMOSPHERE COMPOSITION DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-04A, LOWER ATMOSPHERE COMPOSITION (SED)

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, gas chromatograph Venus lower atmosphere composition data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each record contains the Ground Received Time (GRT) in hours, minutes, and seconds; altitude (km); atmospheric pressure (bars); concentration and intervals for the following gases: CO2, N, H2O, O, A, CO, Ne, and SO2; and the upper limits for the following undetected gases: H, CH4, KR, ethylene, ethane, hydrogen sulfide, carbonyl sulfide, propane, and nitrous oxide. Carbon dioxide and the seven neutral minor constituents were determined from individual and direct measurement of peak areas by computerized curve fitting. Three sample records are given. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE LRG, RAGENT
NEPHELOMETER (LN)

Data set name - SED P/V NEPHELOMETER BACKSCATTER CHANNEL DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-02A, SED NEPHEL. BACKSCATTER CHAN DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer Venus Large Probe, nephelometer backscatter channel data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The card image records are combined on one file. The first portion of the data is a tabulation of the angular weighting or sensitivity function, f (theta), for the nephelometer as a function of scattering angle with respect to the direction of propagation of a nearby monochromatic incident light beam at a wavelength of approximately 900 nanometers. The next section contains the actual measured cross sections as a function of Ground Received Time (GRT). The data include the data baseline offsets in order to illustrate the fluctuation of the data and give some indication of baseline drift during the descent of the Probe. It is necessary to subtract these baseline offsets from the data in order to obtain the true cross section. The first data listed are readings of a monitoring target placed in the field of view (FOV) of the instrument. This target was automatically removed from the FOV upon instrument deployment as noted by the comment "aeroshell removed." These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE LRG, SEIFF
ATMOSPHERIC STRUCTURE (LAS)

Data set name - LAS (SED) PRESSURE AND TEMPERATURE DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-01A, PRESSURE AND TEMPERATURE DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric structure pressure and temperature data are on 9-track, 800-bpi, EBCDIC

magnetic tape created on an IBM 360 computer. Each card image record consists of Ground Received Time (GRT) in hours, minutes, and seconds; derived altitude (km); atmospheric pressures, temperatures, and derived densities; and compressibility factor. The pressure data tabulated have been corrected for offsets and sensor non-linearities, and for Probe dynamic pressure due to the velocity of descent. The temperature data have been corrected for zero offset, for amplifier drift, and for dynamic temperature effects due to Probe velocity. Compressibility factors range from 0.999 at the highest altitudes to a minimum of 0.9925 around 25 km to a maximum of 1.009 at the surface. Altitudes are referenced to 6052.0 km, which is the observed radius in the vicinity of the Large Probe landing site as determined by the Orbiter Radar Altimeter Experiment (78-051A-02). The data are based on the merging of two independent sets of data from redundant sensors. Data entries are at 4-s intervals above 13 km, and at 32-s intervals thereafter. Below about 13 km, the temperature data were faulty, so in this region, extrapolated values are given. These data are contained on the Special Events Data (SED) tapes produced by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE LRG, TOMASKO
SOLAR FLUX RADIOMETER (LSFR)

Data set name - (LSFR) SED-FILE SOLAR UP, DOWN, AND NET FLUX DATA ON MAGNETIC TAPE

NSSDC ID 78-078D-07A, (LSFR) SED SOL., UP, DN, NET FLUX

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, solar flux measurement data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record contains Ground Received Time (GRT) corresponding to when the data sample was taken; atmospheric pressure in earth atmospheres; altitude (km); the upward, downward, and net (downward minus upward) flux in the visible channel (approximately 0.40 to 0.96 microns); the upward, downward, and net fluxes for the narrow-band channel (approximately 0.59 to 0.67 microns); and the upward, downward, and combined fluxes for the combined channel (a synthesis of both the visible and infrared channels into a single broad-band (approximately 0.41 to 1.78 microns). These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

********** PIONEER VENUS PROBE SM1 **********

PIONEER VENUS PROBE SM1, COUNSELMAN
DIFFERENTIAL LONG BASELINE
INTERFEROMETER (DLBI)

Data set name - SN1 CD RELATIVE CRUSTAL AND ATMOSPHERIC VELOCITY COMPONENTS ON MAGNETIC TAPE

NSSDC ID 78-078E-03B, SN1 CD REL.CRUSTAL+ATMOS.VEL.COMP

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, relative crustal and atmospheric velocity components data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM computer. Each 80-byte card image record contains time of reception of the Probe signal at the Canberra tracking station, expressed as seconds since zero hours UTC December 9, 1978; Cartesian components of the velocity of the Probe relative to the crust of the planet in meters per second; and two of the three Cartesian components of the velocity of the Probe relative to the ambient atmosphere in m/s. These components were derived by theoretical calculation involving the aerodynamic drag, the gravitational, and the inertial forces acting on the Probe. These data are on the Composite Data (CD) tape (which contains data from many experiments) created by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM1, CROFT
ATMOSPHERIC PROPAGATION (MPRO)

Data set name - ATMOSPHERIC PROPAGATION SPECTRAL AMPLITUDES

NSSDC ID 78-078E-07A, SPECTRAL AMPS, SIG+NOISE SPECTRA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are processed digital data obtained from the Deep Space Radio telemetry and then supplied to the PI for the Atmospheric Propagation experiment for the probes on Pioneer Venus. They are contained in five notebooks labeled 13-17 inclusive. Notebook 13 contains files marked Box 1 through 5 inclusive. These boxes designate the boxes of punched cards that were produced when the principal investigator (PI) read the printed lists (from the telemetry) in order to make these digital data manually. In the notebooks they are in printout form. These in turn have been microfilmed and are available from NSSDC in that format. Formats are given early in Notebook 13 where the original lists are included. These are labeled in decibels and are just as the PI received them from NASA-JPL in their original form. Notebooks 14 through 17 are labeled "Probe Spectra" and there is one notebook for each of the four probes (Large, Small 1, Small 2 and Small 3). In each case there is a large body of 1,024 numbers packed together in a 32X32 array of 4-digit codes. Each array represents the spectrum of signal-plus-noise for 10 s as derived by John Armstrong. Each set of four digits gives amplitude in thousandths of decibels. The data are based on the open-loop recordings from Deep Space Station 14. The absolute level is arbitrary. The first value is the Ground Received Time in UT seconds; second value is the amplitude estimate in decibels, and is based on power measured in the in-phase and quadrature channels with the center frequency of the filters guided by a phase lock loop. Next, the date-time group is given, followed by the number of points (1,024) and the bandwidth (1017.5 Hz). On the next line is given the time of year in seconds. Since this data set contains data from each of the four probes noted above, it is listed (and described identically) under each of the NSSDC IDs: 78-078D-11A, 78-078E-07A, 78-078F-07A, and 78-078G-07A. Users of these data are advised to contact John Armstrong at JPL. Results from these data are found in Geophys. Res. Letters, v. 7, n. 7, pp. 521-4, 1980.

Data set name - GAS AND PLASMA ENVIRONMENT SIGNAL STRENGTH DATA ON TAPE

NSSDC ID 78-078E-07C, GAS + PLASMA ENVIR. SIGNL STRNGTH

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Probe signal-strength data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The data are contained on 10 files and consist of the signal strength from the descending Probes and, in the case of the Day Probe (Sm 3), after landing. The first file is an introduction containing a list of the first few lines from each of the data files together with the same comments on their interpretation. Files 2-5 contain California Deep Space Network (DSN) measurements with one point every 10 seconds. The next 4 files contain measurements for the Australian Deep Space Network with a point every second. File 10 contains all of the Day Probe (Sm 3) records during the final part of its life on the surface of Venus. Each data record contains UT in hours, minutes, and seconds; and Automatic Gain Control (AGC) in decibels.

PIONEER VENUS PROBE SM1, RAGENT
NEPHELOMETER (SN)

Data set name - SN1(NP) SED BACKSCATTER CHANNEL DATA ON MAGNETIC TAPE

NSSDC ID 78-078E-02A, SN1(NP) SED BACKSCT CHAN. DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer Venus Small Probe 1, nephelometer backscatter channel data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The card image records are contained on one file. The first portion of the data is a tabulation of the angular weighting or sensitivity function f (theta), for the nephelometer as a function of scattering angle with respect to the direction of propagation of a nearby monochromatic incident light beam at a wavelength of about 900 nanometers. The next section contains the actual measured cross sections as a function of Ground Received Time. The data include the data baseline offsets in order to illustrate the fluctuation of the data and give some indication of baseline drift during the descent of the Probe. It is necessary to subtract these baseline offsets from the data in order to obtain the true cross section. The first data listed are readings of a monitoring target placed in the field

of view (FOV) of the instrument. This target was automatically removed from the FOV upon instrument deployment as noted by the comment "window cover open." These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - SED AMBIENT BACKGROUND RADIATION CHANNELS AND SPECTRAL FUNCTION DATA ON MAG. TAPE (*)

NSSDC ID 78-078E-02B, SED AMB. BKGR. RAD., SPECT. FUNC.

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, ambient background radiation channels spectral functions data are on 9-track, 800-bpi EBCDIC magnetic tape created on an IBM 360 computer. The data consist of card images of data received from the Probe UV and visible channels used to detect ambient radiation. The first portion of the data consists of tabulations of spectral functions vs wavelength in nanometers for the UV and visible channels. The second portion of data consists of the instrument readings along with the Ground Received Time (GRT). The time of window cover opening is noted. For these data, the baseline offset has not been subtracted from the data presented so that the user may attempt to note small deviations from the baseline. Baseline offset values are about those values recorded by the instrument prior to window cover opening. All the data received from the Probe were tabulated from instrumental deployment until instrument or Probe failure occurred. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - SED TIME VS TEMPERATURE DATA ON MAGNETIC TAPE (*)

NSSDC ID 78-078E-02C, SED TIME VS. TEMP. DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, nephelometer time vs temperature data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM computer. These card image records consist of a listing of the instrument temperatures at the locations of the light-emitting diode (LED) vs Ground Received Time (GRT). These data are provided to indicate the range of internal environmental conditions experienced by the instrument. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM1, SEIFF
ATMOSPHERE STRUCTURE (SAS)

Data set name - SED-FILE SAS LOW ATMOSPHERIC STATE PROPERTIES (NORTH PROBE) DATA ON MAG TAPE

NSSDC ID 78-078E-01A, (SAS) SED LOW ATMOS PROPERTIES

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric structure low atmospheric properties data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record consists of Ground Received Time (GRT) in hours, minutes, and seconds; derived altitude (km); atmospheric pressures, temperatures, and derived densities; and compressibility factor. The pressure data tabulated have been corrected for offsets and sensor non-linearities, and for Probe dynamic pressure due to the velocity of descent. The temperature data have been corrected for zero offset, for amplifier drift, and for dynamic temperature effects due to Probe velocity. Compressibility factors range from 0.999 at the highest altitudes to a minimum of 0.925 around 25 km to a maximum of 1.009 at the surface. Altitudes are referenced to 6052.0 km, which is the observed radius in the vicinity of the Large Probe landing site as determined by the Orbiter Radar Altimeter Experiment (78-051A-02). The data are based on the merging of two independent sets of data from the redundant sensors. Data intervals are 8 s in upper descent, 16 s in lower descent, and 32 s below 12 to 14 km. Below about 13 km the temperature data were faulty, so in this region extrapolated values are given. These data are contained on the Special Events Data (SED) tapes produced by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM1, SUOMI
NET FLUX RADIOMETER (SNFR)

Data set name - (SNFR) SED-FILE NET FLUX RADIOMETER (NORTH PROBE) DATA ON MAGNETIC TAPE

NSSDC ID 78-078E-04A, SNFR SED NET FLUX RADIOMETER

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, net flux radiometer data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains the Ground Received Time (GRT) in minutes after 1900 GMT; altitude (km) above 90.3 bars surface pressure; pressure (bars); atmospheric temperature (K); external sensor temperature (K); net total radiance flux density in watts/sq m as measured, with positive signs indicating upward flux exceeds downward flux; and net flux corrected for estimated effects of deployment transient, rate of change of offset, and non-vertical attitude. These data are contained on the Special Events Data (SED) tape provided by the Unified Abtract Data System (UADS).

********** PIONEER VENUS PROBE SM2 **********

PIONEER VENUS PROBE SM2, COUNSELMAN
DIFFERENTIAL LONG BASELINE
INTERFEROMETER (DLBI)

Data set name - SM2 CD RELATIVE CRUSTAL AND ATMOSPHERIC VELOCITY COMPONENTS DATA ON MAGNETIC TAPE

NSSDC ID 78-078F-03B, SM2 CD REL.CRUSTAL+ATMOS.VEL.COMP

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, relative crustal and atmospheric velocity components data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains time of reception of the Probe signal at the Canberra tracking station, expressed as seconds since zero hours UTC December 9, 1978; Cartesian components of the velocity of the Probe relative to the crust of the planet, in m/s; and two of the three Cartesian components of the velocity of the Probe relative to the ambient atmosphere in m/s. These components were derived by theoretical calculation involving the aerodynamic drag, the gravitational, and the inertial forces acting on the Probe. These data are on the Composite Data (CD) tape (which contains data from many experiments) created by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM2, CROFT
ATMOSPHERIC PROPAGATION (MPRO)

Data set name - ATMOSPHERIC PROPAGATION SPECTRAL AMPLITUDES

NSSDC ID 78-078F-07A, SPECTRAL AMPS, SIG+NOISE SPECTRA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are processed digital data obtained from the Deep Space Radio telemetry and then supplied to the PI for the Atmospheric Propagation experiment for the probes on Pioneer Venus. They are contained in five notebooks labeled 13-17 inclusive. Notebook 13 contains files marked Box 1 through 5 inclusive. These boxes designate the boxes of punched cards that were produced when the principal investigator (PI) read the printed lists (from the telemetry) in order to make these digital data manually. In the notebooks they are in printout form. These in turn have been microfilmed and are available from NSSDC in that format. Formats are given early in Notebook 13 where the original lists are included. These are labeled in decibels and are just as the PI received them from NASA-JPL in their original form. Notebooks 14 through 17 are labeled "Probe Spectra" and there is one notebook for each of the four probes (Large, Small 1, Small 2 and Small 3). In each case there is a large body of 1,024 numbers packed together in a 32x32 array of 4-digit codes. Each array represents the spectrum of signal-plus-noise for 10 s as derived by John Armstrong. Each set of four digits gives amplitude in thousandths of decibels. The data are based on the open-loop recordings from Deep Space Station 14. The absolute level is arbitrary. The first value is the Ground Received Time (GRT) in UT seconds; second value is the amplitude estimate in

decibels, and is based on power measured in the in-phase and quadrature channels with the center frequency of the filters guided by a phase lock loop. Next, the date-time group is given, followed by the number of points (1,024) and the bandwidth (1017.5 Hz). On the next line is given the time of year in seconds. Since this data set contains data from each of the four probes noted above, it is listed (and described identically) under each of the NSSDC IDs 78-078D-11A, 78-078E-07A, 78-078F-07A, and 78-078G-07A. Users of these data are advised to contact John Armstrong at JPL. Results from these data are found in Geophys. Res. Letters, v. 7, n. 7, pp. 521-4, 1980.

Data set name - PROBE SPECTRA OF SIGNAL PLUS NOISE (MPRO)

NSSDC ID 78-078F-07B, PROBE SPECTRA OF SIGNAL + NOISE

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained in the preceding data set 78-078F-07A and is described therein.

Data set name - GAS AND PLASMA ENVIRONMENT SIGNAL STRENGTH DATA ON TAPE

NSSDC ID 78-078F-07C, GAS + PLASMA ENVIR. SIGNL STRNGTH

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Probe signal strength data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The data are contained on 10 files and consist of the signal strength from the descending Probes and, in the case of the Day Probe (Sn 3), after landing. The first file is an introduction containing a list of the first few lines from each of the data files together with some comments on their interpretation. Files 2-5 contain California Deep Space Network (DSN) measurements with one point every 10 seconds. The next 4 files contain measurements for the Australian DSN with a point every second. The tenth file contains all of the Day Probe (Sn 3) records during the final part of its life on the surface of Venus. Each data record contains UT in hours, minutes, and seconds; and Automatic Gain Control (AGC) in decibels.

PIONEER VENUS PROBE SM2, RAGENT
NEPHELOMETER (SN)

Data set name - (SN) SED-FILE BACKSCATTER, ANGULAR WEIGHTING (NIGHT-PROBE) FUNCTION DATA

NSSDC ID 78-078F-02A, (SN) SED BKSCAT., ANG. WT. FN.

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer Venus Probe, nephelometer backscatter channel data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The card image records are contained on one file. The first portion of the data is a tabulation of the angular weighting or sensitivity function, f (theta), for the nephelometer as a function of scattering angle with respect to the direction of propagation of a nearby non-achromatic incident light beam at a wavelength of about 900 nm. The next section contains the actual measured cross sections as a function of Ground Received Time (GRT). The data include the data baseline offsets in order to illustrate the fluctuation of the data and give some indication of baseline drift during the descent of the Probe. It is necessary to subtract these baseline offsets from the data in order to obtain the true cross section. The first data listed are readings of a monitoring target placed in the field of view (FOV) of the instrument. This target was automatically removed from the FOV upon instrument deployment as noted by the comment "window cover open." These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - (SN) SED-FILE TIME VS TEMERATURE (NIGHT-PROBE) DATA ON MAGNETIC TAPE

NSSDC ID 78-078F-02B, (SN) SED TIME VS TEMP. DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, nephelometer time vs temperature data are on 9-track, 800-bpi EBCDIC magnetic tape created on an IBM 360 computer. These card image records consist of a listing of the instrument temperatures at the locations of the light-emitting diode (LED) vs Ground Received Time (GRT). These data are provided to indicate the range of internal environmental conditions experienced by the instrument. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - SN SED-FILE AMBIENT BACKGROUND RADIATION CHANNELS & SPECTRAL FUNCTION (NIGHT-PROBE)

NSSDC ID 78-078F-02C, (SN) SED AMB. BKGR. RAD., SP. FN.

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, ambient background radiation channels spectral functions data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data consist of card images of data received from the Probe UV and visible channels used to detect ambient radiation. The first portion of the data consists of tabulation of spectral functions vs wavelength in nanometers for the UV and visible channels. The second portion of data consists of the instrument readings along with the Ground Received Time (GRT). The time of window cover opening is noted. For these data the baseline offset has not been subtracted from the data so that the user may attempt to note small deviations from the baseline. Baseline offset values are about those values recorded by the instrument prior to window cover opening. All the data received from the Probe were tabulated from instrumental deployment until the instrument or Probe failure occurred. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM2, SEIFF
ATMOSPHERIC STRUCTURE (SAS)

Data set name - (SAS) SED-FILE LOW ATMOSPHERIC STATE PROPERTIES (NIGHT-PROBE) DATA ON MAG. TAPE

NSSDC ID 78-078F-01A, (SAS) SED LOW ATMOS PROPERTIES

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric structure low atmospheric properties data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record consists of Ground Received Time (GRT) in hours, minutes, and seconds; derived altitude (km); atmospheric pressures, temperatures, and derived densities; and compressibility factor. The pressure data tabulated have been corrected for offsets and sensor non-linearities, and for Probe dynamic pressure due to the velocity of descent. The temperature data have been corrected for zero offset, for amplifier drift, and for dynamic temperature effects due to Probe velocity. Compressibility factors range from 0.999 at the highest altitudes to a minimum of 0.925 around 25 km to a maximum of 1.009 at the surface. Altitudes are referenced to 6052.0 km, which is the observed radius in the vicinity of the Large Probe landing site as determined by the Orbiter Radar Altimeter Experiment (78-051A-02). The data are based on the merging of two independent sets of data from redundant sensors. Data intervals are 8 s in upper descent, 16 s in lower descent, and 32 s below 12 to 14 km. Below about 13 km, the temperature data were faulty, so in this region, extrapolated values are given. These data are contained on the Special Events Data (SED) tapes produced by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM2, SUOMI
NET FLUX RADIOMETER (SNFR)

Data set name - (SNFR) SED-FILE NET FLUX RADIOMETER (NIGHT-PROBE) DATA ON MAGNETIC TAPE

NSSDC ID 78-078F-04A, SNFR SED NET FLUX RADIOMETER

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, net flux radiometer data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains the Ground Received Time (GRT) in minutes after 1900 GMT; altitude (km) above 90.3 bar pressure surface; pressure (bars); atmospheric temperature (K); external sensor temperature (K); net total radiance flux density in W/sq m as measured, with positive signs indicating upward flux exceeds downward flux; and net flux corrected for estimated effects of deployment transient, rate of change of offset, and non-vertical attitude. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

********** PIONEER VENUS PROBE SM3 **********

PIONEER VENUS PROBE SM3, COUNSELMAN
DIFFERENTIAL LONG BASELINE
INTERFEROMETER (DLBI)

Data set name - SN3 CD RELATIVE CRUSTAL AND ATMOSPHERIC VELOCITY COMPONENTS DATA ON MAGNETIC TAPE

NSSDC ID 78-078G-03B, SN3 CD REL.CRUSTAL+ATMOS.VEL.COMP

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, relative crustal and atmospheric velocity components data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains time of reception of the Probe signal at the Canberra tracking station, expressed as seconds since zero hours UTC December 9, 1978; Cartesian components of the velocity of the Probe relative to the crust of the planet in m/s; and two of the three Cartesian components of the velocity of the Probe relative to the ambient atmosphere in m/s. These components were derived by theoretical calculation involving the aerodynamic drag, the gravitational, and the inertial forces acting on the Probe. These data are on the Composite Data (CD) tape (which contains data from many experiments) created by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM3, CROFT
ATMOSPHERIC PROPAGATION (MPRO)

Data set name - ATMOSPHERIC PROPAGATION SPECTRAL AMPLITUDES

NSSDC ID 78-078G-07A, SPECTRAL AMPS, SIG+NOISE SPECTRA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are processed digital data obtained from the Deep Space Radio telemetry and then supplied to the PI for the Atmospheric Propagation Experiment for the Probes on Pioneer Venus. They are contained in five notebooks labeled 13-17 inclusive. Notebook 13 contains files marked Box 1 through 5 inclusive. These boxes designate the boxes of punched cards that were produced when the PI read the printed lists (from the telemetry) in order to make these digital data manually. In the notebooks they are in printout form. These in turn have been microfilmed and are available from NSSDC in that format. Formats are given early in Notebook 13 where the original lists are included. These are labeled in decibels and are just as the PI received them from NASA-JPL in their original form. Notebooks 14 through 17 are labeled "Probe Spectra" and there is one notebook for each of the four Probes (Large, Small 1, Small 2 and Small 3). In each case there is a large body of 1,024 numbers packed together in a 32X32 array of 4-digit codes. Each array represents the spectrum of signal-plus-noise for 10 s as derived by John Armstrong. Each set of four digits gives amplitude in thousandths of decibels. The data are based on the open-loop recordings from Deep Space Station 14. The absolute level is arbitrary. The first value is the Ground Received Time in UT seconds; second value is the amplitude estimate in decibels and is based on power measured in the in-phase and quadrature channels with the center frequency of the filters guided by a phase lock loop. Next, the date-time group is given, followed by the number of points (1,024) and the bandwidth (1017.5 Hz). On the next line is given the time of year in seconds. Since this data set contains data from each of the four Probes noted above, it is listed (and described identically) under each of the NSSDC IDs 78-078D-11A, 78-078E-07A, 78-078F-07A, and 78-078G-07A. Users of these data are advised to contact John Armstrong at JPL. Results from these data are found in Geophys. Res. Letters, v. 7, n. 7, pp. 521-524, 1980.

Data set name - PROBE SPECTRA OF SIGNAL PLUS NOISE (MPRO)

NSSDC ID 78-078G-07B, PROBE SPECTRA OF SIGNAL + NOISE

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set is contained in the previous data set 78-078G-07A and is described therein.

Data set name - GAS AND PLASMA ENVIRONMENT SIGNAL STRENGTH DATA ON TAPE

NSSDC ID 78-078G-07C, GAS + PLASMA ENVIR. SIGNL STRNGTH

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Probe signal strength data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The data are contained on 10 files and consist of the signal strength from the descending Probes, and in the case of the Day Probe (Sm 3), after landing. The first file is an introduction containing a list of the first few lines from each of the data files together with some comments on their interpretation. Files 2-5 contain the California Deep Space Network (DSN) measurements with one point every 10 seconds. The next 4 files contain measurements for the Australian DSN with a point every second. The tenth file contains all of the Day Probe (Sm 3) records during the final part of its life on the surface of Venus. Each data record contains UT in hours, minutes, and seconds; and Automatic Gain Control (AGC) in decibels.

PIONEER VENUS PROBE SM3, RAGENT
NEPHELOMETER (SN)

Data set name - (SN) SED-FILE BACKSCATTER CHANNEL DATA ON MAGNETIC TAPE

NSSDC ID 78-078G-02A, (SN) SED BACKSCATTER CHANNEL DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Pioneer Venus Probe nephelometer backscatter channel data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The card image records are contained on one file. The first portion of the data is a tabulation of the angular weighting or sensitivity function, f (theta), for the nephelometer as a function of scattering angle with respect to the direction of propagation of a nearby monochromatic incident light beam at a wavelength of about 900 nm. The next section contains the actual measured cross sections as a function of Ground Received Time (GRT). The data include the data baseline offsets in order to illustrate the fluctuation of the data and give some indication of baseline drift during the descent of the Probe. It is necessary to subtract these baseline offsets from the data in order to obtain the true cross section. The first data listed are readings of a monitoring target placed in the field of view (FOV) of the instrument. This target was automatically removed from the FOV upon instrument deployment as noted by the comment "window cover open." These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - (SN) SED-FILE AMBIENT BACKGRND RADIATION CHANNELS & SPECTRAL FUNCTION (DAY-PROBE)

NSSDC ID 78-078G-02B, (SN) SED AMB. BKGR. RAD., SP. FN.

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, ambient background radiation channels spectral functions data are on 9-track, 800-bpi EBCDIC magnetic tape created on an IBM 360 computer. The data consist of card images of data received from the Probe UV and visible channels used to detect ambient radiation. The first portion

of the data consists of tabulations of spectral functions vs wavelength in nanometers for the UV and visible channels. The second portion of data consists of the instrument readings along with the Ground Received Time (GRT). The time of window cover opening is noted. For these data the baseline offset has not been subtracted from the data presented so that the user may attempt to note small deviations from the baseline. Baseline offset values are about those values recorded by the instrument prior to window cover opening. All the data received from the Probe were tabulated from instrumental deployment until the instrument or Probe failure occurred. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

Data set name - SED TIME VS TEMPERATURE DATA ON MAGNETIC TAPE (*)

NSSDC ID 78-078G-02C, SED TIME VS. TEMP. DATA

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, nephelometer time vs temperature data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. These card image records consist of a listing of the instrument temperatures at the locations of the light-emitting diode (LED) vs the Ground Received Time (GRT). These data are provided to indicate the range of internal environmental conditions experienced by the instrument. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM3, SEIFF
ATMOSPHERIC STRUCTURE (SAS)

Data set name - (SAS) SED-FILE LOW ATMOSPHERIC STATE PROPERTIES (DAY-PROBE) DATA ON MAG TAPE

NSSDC ID 78-078G-01A, (SAS) SED LOW ATMOS PROPERTIES

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, atmospheric structure low atmospheric properties data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each card image record consists of Ground Received Time (GRT) in hours, minutes, and seconds; derived altitude (km); atmospheric pressures, temperatures, and derived densities; and compressibility factor. The pressure data tabulated have been corrected for offsets and sensor non-linearities, and for Probe dynamic pressure due to the velocity of descent. The temperature data have been corrected for zero offset, for amplifier drift, and for dynamic temperature effects due to Probe velocity. Compressibility factors range from 0.999 at the highest altitudes to a minimum of 0.925 around 25 km to a maximum of 1.009 at the surface. Altitudes are referenced to 6052.0 km, which is the observed radius in the vicinity of the Large Probe landing site as determined by the Orbiter Radar Altimeter Experiment (78-051A-02). The data are based on the merging of two independent sets of data from the redundant sensors. Data intervals are 8 s in upper descent, 16 s in lower descent, and 32 s below 12 to 13 km. Below about 13 km, the temperature data were faulty, so in this region, extrapolated values are given. These data are contained on the Special Events Data (SED) tapes produced by the Unified Abstract Data System (UADS).

PIONEER VENUS PROBE SM3, SUOMI
NET FLUX RADIOMETER (SNFR)

Data set name - (SNFR) SED-FILE NET FLUX RADIOMETER (DAY-PROBE) DATA ON MAGNETIC TAPE

NSSDC ID 78-078G-04A, SNFR SED NET FLUX RADIOMETER

Time period covered - 12/09/78 TO 12/09/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, net flux radiometer data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. Each 80-byte card image record contains the Ground Received Time (GRT) in minutes after 1900 GMT; altitude (km) above 90.3 bar pressure surface; pressure (bars); atmospheric temperature (K); external sensor temperature (K); net total radiance flux density in W/sq m as measured, with positive signs indicating upward flux exceeds downward flux; and net flux corrected for estimated effects of deployment transient, rate of change of offset, and non-vertical attitude. These data are contained on the Special Events Data (SED) tape provided by the Unified Abstract Data System (UADS).

********** VENERA 9 **********

VENERA 9, VAISBERG
PLASMA ELECTROSTATIC SPECTROMETER

Data set name - 1-HOUR AVERAGES OF SOLAR WIND PARAMETERS VELOCITY AND TEMPERATURE ON MICROFICHE

NSSDC ID 75-050A-10A, 1-HR AVE SOLAR WIND V + T, MFICHE

Time period covered - 06/09/75 TO 10/31/75
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of microfiched tables of 1-h averages of ion temperature in electron volts, and average solar wind velocity in km/s for UT hour of date (y,m,d). Venera 9 and 10 data (75-050A-10A, and 75-054A-10A) are combined. Most of the data are from Venera 10 with Venera 9 data filling in the gaps. Those data that are asterisked are Venera 9 data. The parameters listed are preliminary. Included also are plots of solar wind velocity vs day of month, for the months of June 1975 through April 1976.

********** VENERA 9 DESCENT CRAFT **********

VENERA 9 DESCENT CRAFT, UNKNOWN
PANORAMIC TELEPHOTOMETER FOR SURFACE IMAGERY

Data set name - COMPUTER ENHANCED LANDER PHOTOGRAPHY OF THE VENUSIAN SURFACE

NSSDC ID 75-050D-01A, LANDER PHOTOGRAPHY

Time period covered - 10/22/75 TO 10/22/75
(As verified by NSSDC)

Quantity of data - 1 B/W NEGATIVE FRAME

This data set consists of computer-enhanced photographs of the surface of Venus at the landing site of Venera 9. They show the surface characteristics in the immediate vicinity of the landing spacecraft. Resolution is in the cm range. Parts of the spacecraft are also visible. The original paper print contains dirt specks. Therefore, copies will be somewhat degraded.

********** VENERA 10 **********

VENERA 10, VAISBERG
PLASMA ELECTROSTATIC SPECTROMETER

Data set name - 1-HOUR AVERAGES OF SOLAR WIND PARAMETERS VELOCITY AND TEMPERATURE ON MICROFICHE

NSSDC ID 75-054A-10A, 1-HR AVE SOLAR WIND V + T, MFICHE

Time period covered - 06/16/75 TO 04/19/76
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of microfiched tables of 1-h averages of ion temperature in electron volts, and average solar wind velocity in km/s for UT hour of date (y,m,d). Venera 9 and 10 data (75-050A-10A, and 75-054A-10A) are combined. Most of data are from Venera 10 with VENERA 9 filling in gaps. The asterisked data are Venera 9 data. The parameters listed are preliminary. Included also are plots of solar wind velocity vs day of month for months from June 1975 through April 1976.

********** VENERA 10 DESCENT CRAFT **********

VENERA 10 DESCENT CRAFT, UNKNOWN
PANORAMIC TELEPHOTOMETER FOR SURFACE IMAGERY

Data set name - COMPUTER ENHANCED LANDER PHOTOGRAPHY OF

THE VENUSIAN SURFACE

NSSDC ID 75-054D-01A, LANDER PHOTOGRAPHY

Time period covered - 10/25/75 TO 10/25/75
(As verified by NSSDC)

Quantity of data - 1 B/W NEGATIVE FRAME

The data set consists of computer-enhanced photograghs of the surface of Venus at the landing site of Venera 10. They show the surface characteristics in the immediate vicinity of the landing spacecraft. Resolution is in the cm range. Parts of the spacecraft are also visible. The original paper print contains dirt specks. Therefore, copies will be somewhat degraded.

********** VENERA 13 DESCENT CRAFT **********

VENERA 13 DESCENT CRAFT, UNKNOWN
PANORAMIC TELEPHOTOMETER FOR SURFACE
IMAGERY

Data set name - BLACK AND WHITE SURFACE PHOTOS, PANORAMA

NSSDC ID 81-106D-01A, B/W SURFACE PHOTOS, PANORAMA

Time period covered - 03/01/82 TO 03/01/82
(As verified by NSSDC)

Quantity of data - 2 B/W NEGATIVE FRAMES

This data set consists of B/W photography of the surface of Venus returned by the Venera 13 Lander. In all, eight B/W photographs were transmitted by two cameras during the 100-minute surface life of Venera 13. NSSDC holds two of the B/W panoramas returned by Venera 13. Panorama views cover 170 degrees and are composed of 1000 x 252 pixels. Each pixel has a value between 0 and 512. The signal/noise ratio for the Venera cameras using the colorless glass filter was approximately 1000 for illumination by a 6000 lux type A source. The depth of field of the Venera 13 cameras extended from 0.8 m to infinity. For further information on the cameras or the processing of the pictures see Cosmic Research, 1983, Consultants Bureau, New York, v. 21, n. 2 and 3 or the Russian original, Kosmicheskie Issledovanija, 1983, Moscow, v. 21, n. 2 and 3. Selected B/W photographs are included in these issues.

Data set name - COLOR SURFACE PHOTOS, PANORAMA

NSSDC ID 81-106D-01B, COLOR SURFACE PHOTOS, PANORAMA

Time period covered - 03/01/82 TO 03/01/82
(As verified by NSSDC)

Quantity of data - 2 COLOR POSITIVE FRAMES

This data set consists of a color photograph of the surface of Venus returned by the Venera 13 Lander. In all, 14 color photographs were transmitted by 2 cameras during the 100-minute surface life of Venera 13. NSSDC holds one of the color panoramas returned by Venera 13. Panorama views cover 170 degrees. Color pictures are produced by a color separation process using three filters: dark blue, green, and red. The dark blue filter, centered at 0.45 micrometers, has a signal/noise ratio of 200 under illumination by a 6000 lux type A source. The green filter, centered at 0.54 micrometers, has a signal/noise ratio of 300 under illumination by a 6000 lux type A source. The red filter, centered at 0.63 micrometers, has a signal/noise ratio of 300 under illumination by a 6000 lux type A source. A color test rod containing gray (innermost), red, green, and blue (outermost) is visible in the picture. Because of a deficit of blue wavelength radiation on the Venusian surface, only the red segment of the test rod has a color in the picture aproximating its true color. The panorama views are composed of 252 x 1000 pixels. Each pixel has a value between 0 and 512. The depth of field of the Venera 13 cameras extended from 0.8 m to infinity. For further information on the cameras or the processing of the pictures see Cosmic Research, 1983, Consultants Bureau, New York, v. 21, n. 2 and 3 or the Russian original, Kosmicheskie Issledovanija, 1983, Moscow, v. 21, n. 2 and 3. Selected B/W and color (Russian edition only) photographs are included in these issues.

********** VENERA 14 DESCENT CRAFT **********

VENERA 14 DESCENT CRAFT, UNKNOWN
PANORAMIC TELEPHOTOMETER FOR SURFACE
IMAGERY

Data set name - BLACK AND WHITE SURFACE PHOTOS, PANORAMA

NSSDC ID 81-110D-01A, B/W SURFACE PHOTOS, PANORAMA

Time period covered - 03/05/82 TO 03/05/82
(As verified by NSSDC)

Quantity of data - 2 B/W NEGATIVE FRAMES

This data set consists of B/W photography of the surface of Venus returned by the Venera 14 Lander. In all, four B/W photographs were transmitted by two cameras during the 60-minute surface life of Venera 14. NSSDC holds two of the B/W panoramas returned by Venera 14. Panorama views cover 170 degrees. Panoramas are composed of 1000 x 252 pixels, each of which has a value between 0 and 512. The signal/noise ratio for the Venera cameras using the colorless glass filter was approximately 1000 for illumination by a 6000 lux type A source. The depth of field of the Venera 14 cameras extended from 0.8 m to infinity. For further information on the cameras or the processing of the pictures see Cosmic Research, 1983, Consultants Bureau, New York, v. 21, n. 2 and 3 or the Russian original, Kosmicheskie Issledovanija, 1983, Moscow, v. 21, n. 2 and 3. Selected B/W photographs are included in these issues.

********** VIKING 1 LANDER **********

Data set name - BIBLIOGRAPHY OF THE VIKING MARS SCIENCES

NSSDC ID 75-075C-00D, BIBLIOGRAPHY OF VIKING MARS SCI

Time period covered - (N/A)

Quantity of data - 10 CARDS OF B/W MICROFICHE

This is the first edition, published May 18, 1978, of a bibliography of the scientific results of the Viking missions, the two Landers and the two Orbiters. It attempts to include every publication in a scientific journal of the experimental results, or theoretical interpretation of the Viking data descriptions of the scientific instruments that might be of value to scientists utilizing these data, and a few general papers or books summarizing the results or describing the mission operations and history. This bibliography does not include abstracts or presentations at scientific meetings, accounts in newspapers and popular magazines, and scientific discussions of Mars that are not directly related to the information acquired by the Viking spacecraft.

VIKING 1 LANDER, ARVIDSON
LANDER IMAGING

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-075C-06A, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 07/20/76 TO 07/25/76
(Date supplied by experimenter)

Quantity of data - 16 B/W NEGATIVE FRAMES

These data are on 4- x 5-in. B/W negatives released by the Project for public distribution. These photographs are of selected scenes near the Lander that are of general interest to the public. A description of each photograph is included.

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-075C-06B, COLOR LANDER PRESS RELEASE PHOTOS

Time period covered - 07/26/76 TO 10/06/76
(As verified by NSSDC)

Quantity of data - 12 COLOR POSITIVE FRAMES

These data are on 4- x 5-in. color film released by the Project for public distribution. These photographs are of selected scenes near the Lander that are of general interest to the public. A description of each photograph is included. The coloring cannot be considered to be accurate because of color inaccuracies in reproduction.

Data set name - TEAM DATA RECORD (TDR) IMAGING PRODUCTS

NSSDC ID 75-075C-06C, TDR B/W PHOTOGRAPHY

Time period covered - 07/20/76 TO 02/24/82
(As verified by NSSDC)

Quantity of data - 907 B/W NEGATIVE FRAMES

These data, supplied by the Lander imaging team, are on 5- x 12-in. B/W film. TDR data consist of those camera events (CE) from the EDR thought to be of most general interest. They exclude such things as specialized photometric series, calibration and scan verification events, and solar images. The processing parameters for the camera events in the TDR were chosen to create photographic products of the highest scientific quality. Each frame is divided into segments, with the data block appearing on the last segment of the camera event. The TDR and EDR CE labels are identical. The TDR version will be used for requests unless EDR is specified. The TDR-IPL Prime Mission Catalog (75-075C-06K) should be used to order TDR images.

Data set name - EXPERIMENTER DATA RECORD (EDR) BLACK AND WHITE PHOTOGRAPHY

NSSDC ID 75-075C-06D, EDR B/W PHOTOGRAPHY

Time period covered - 07/20/76 TO 08/06/82
(As verified by NSSDC)

Quantity of data - 902 B/W NEGATIVES

This data set, supplied by the Lander Imaging Team, consists of the B/W EDR version of the Lander photography. The data block on each frame contains identification, processing, and camera event information. The data are available on 5-in. roll film or as individual 5- x 5-in. frames, and may be ordered with or without the data block. This total data set is a complete record of the Lander imaging data as received on earth. The Picture Catalog of Primary Mission EDR (75-075C-06E) should be used to order EDR images.

Data set name - PICTURE CATALOG OF PRIMARY MISSION EXPERIMENT DATA RECORD (EDR)

NSSDC ID 75-075C-06E, PICTURE CAT OF PRIME MISSION EDR

Time period covered - (N/A)

Quantity of data - 5 CARDS OF B/W MICROFICHE

These data are on B/W microfiche generated at NSSDC from NASA Reference Publication 1007 prepared by Robert B. Tucker. This publication is a general reference for the imaging data from the Viking Lander primary mission. It presents the results of the procedures that were applied to the imaging data to produce an organized record that is as complete and as error-free as possible. The result is called the Experiment Data Record (EDR). This publication contains all images returned by the two Viking Landers during the primary mission. Skyline drawings display the outlines of the images as they appear in the viewing area. Also included are a selection of computer-generated camera event reports that list supplemental information about the conditions under which the data were collected and how they were processed and recorded. In addition to a comprehensive report, several listings are included that group the images in a variety of ways (e.g., by time of day). A section on terminology has been included to assist with the interpretation of the listings and the image presentation. Several diagrams also provide assistance on this subject. This publication will acquaint the user with the imaging data that are available from the Viking Lander primary mission and the procedure used to obtain photographic products. It is necessary to order this data set to select EDR images (75-075C-06D).

Data set name - TEAM DATA RECORD (TDR) COLOR PHOTOGRAPHY

NSSDC ID 75-075C-06F, TDR COLOR PHOTOGRAPHY

Time period covered - 07/22/76 TO 11/03/76
(As verified by NSSDC)

Quantity of data - 201 COLOR NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of 5- x 12-in. color images selected from the B/W TDR images. There are generally two versions of each scene. The two versions represent the colors as seen on Mars under Mars lighting conditions and as seen on earth under earth lighting conditions. Included on each frame are gray scale wedges, data blocks, and color spectrum histograms. Occasionally, a third type is given in which the color is as on Mars but was made from products that did not have the full six-channel data acquired. This type is called "radcam". The TDR-IPL Prime Mission Catalog (75-075C-06K) should be used to order TDR images. The coloring cannot be considered to be accurate because of color inaccuracies in reproduction.

Data set name - HIGH-RESOLUTION B/W MOSAICS

NSSDC ID 75-075C-06H, LANDER HI-RES MOSAICS

Time period covered - (N/A)

Quantity of data - 16 B/W NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of computer-generated high-resolution mosaics on 8- x 10-in. B/W negatives. Two sets of mosaics were produced: one set for images acquired early in the morning and a second set for images acquired in the mid-afternoon. The complete mosaic scene extends 342.5 deg in azimuth. The image area extends from approximately 5 deg above the horizon to 60 deg below. The mosaic negatives have been made in two forms. In one case, using a 25-micrometer spot size, the complete four quadrants of a single mosaic are contained on a single 8- x 10-in. negative. In the second case, three products are made using a 100-micrometer spot size. They cover quadrants 1 and 2, 2 and 3, and 3 and 4 on each of three 8- x 10-in. negatives. The quadrant azimuth limits are as follows: quadrant 1 is 0 to 90 deg, quadrant 2 is 84 to 174 deg, quadrant 3 is 168 to 258 deg, and quadrant 4 is 252 to 342 deg.

Data set name - HIGH RESOLUTION BLACK AND WHITE DONUT PROJECTION MOSAICS

NSSDC ID 75-075C-06I, LANDER DONUT PROJECTION IMAGE

Time period covered - 08/09/76 TO 08/19/76
(As verified by NSSDC)

Quantity of data - 4 B/W NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of 8- x 10-in. B/W negatives of computer-generated panoramas produced to show a 360-deg fisheye-type image of the Martian terrain with the camera in the center of the image. This produces a "hole" where the cameras could not scan and hence the name "donut". They are useful primarily for showing the locations of features relative to the Landers. Each donut image was created using a high-resolution mosaic from data set 75-075C-06H. These mosaics were sub-sampled by a factor of three, reducing the resolution, to conserve computer processing time. The donut images were generated for the same time periods as the mosaics.

Data set name - MULTIPLE CE-LABEL (BLUE-GREEN-RED) LANDER PHOTOGRAPHY ON 5X12-INCH FILM

NSSDC ID 75-075C-06J, MULTI-CE-LABEL LANDER PHOTOS

Time period covered - 03/11/77 TO 03/12/77
(As verified by NSSDC)

Quantity of data - 7 COLOR NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of 5- x 12-in. color images prepared by combining the output from 2 or 3 diodes (usually red, green, and blue). The images were acquired during the extended mission and supplied by the Lander Imaging Team. The coloring cannot be considered to be accurate because of inaccuracies in reproduction and aging of the images. No catalog of these photos exists at NSSDC.

Data set name - TDR-IPL PRIME MISSION CATALOG ON MICROFICHE

NSSDC ID 75-075C-06K, TDR-IPL PRIME MISSION CATALOG

Time period covered - (N/A)

Quantity of data - 3 CARDS OF B/W MICROFICHE

This data set, supplied by the Lander Imaging Team, is on B/W microfiche. The necessary ordering information is camera event (CE) label, version, segment, and IPL picture ID. Engineering parameters are also included. An asterisk with the CE label indicates the availability of a color image. It is necessary to order this data set to select TDR images (75-075C-06C and -06F).

Data set name - CATALOG OF PRIMARY MISSION TDR COLOR IMAGES

NSSDC ID 75-075C-06L, CATALOG OF PRIMARY TDR COL IMAGES

Time period covered - (N/A)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of a catalog printout, which was filmed by NSSDC, of all primary mission TDR color images. The necessary ordering information is camera event (CE) label, version, segment, and IPL picture ID. Engineering parameters are also included. It is necessary to order this data set to select color TDR images (75-075C-06F) and (75-083C-06F).

Data set name - HIGH-RESOLUTION MOSAIC INDEX AND MOSAICKING DESCRIPTION

NSSDC ID 75-075C-06M, HI-RES MOSAIC INDEX + DESCRIPTION

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set, filmed by NSSDC, from experimenter supplied hardcopy, consists of all the available Lander high resolution mosaics, a mosaicking description, and an index on 16-mm microfilm. The intended purpose of this data set is to aid in selecting individual photographs.

Data set name - PRIME, EXTENDED, AND CONTINUATION PICTURE CATALOG

NSSDC ID 75-075C-06N, PRIME, EXT, CONT MISSION PIC CAT

Time period covered - (N/A)

Quantity of data - 66 CARDS OF B/W MICROFICHE

These data, on black and white microfiche, supplied by the investigation team, are in COSATI format with 60 images per card. The top of each card contains the microfiche card number and a frame delineating the CE label numbers contained on that card. The images are actual duplications of the Lander photos. The data block for each image contains information as to spacecraft name, camera, CE label number, azimuthal elevation angles, sun azimuth and elevation. The IPL picture ID is also given in this data block.

Data set name - EXPERIMENT DATA RECORD IMAGE DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-06O, EDR IMAGE DATA ON TAPE

Time period covered - 07/20/76 TO 08/08/78
(As verified by NSSDC)

Quantity of data - 90 REELS OF TAPE

These experimenter-supplied, experiment data record image data are on 9-track, 800-bpi EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters: satellite identification, camera number, diode, stepsize, channel/mode, azimuth, elevation, offset, gain, scan rate, data rate, data path, total lines, rescan begin and total, sun azimuth and elevation, anti-solar azimuth and elevation, event day and time of day, standard deviation, number of missing lines and gaps, percentage of missing data, and source tape and file number.

Data set name - HIGH RESOLUTION MOSAIC

NSSDC ID 75-075C-06P, HIGH RESOLUTION MOSAIC

Time period covered - (N/A)

Quantity of data - 16 REELS OF TAPE

The experimenter-supplied, high-resolution mosaic data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters - satellite identification; camera number; diode; stepsize; channel/mode; azimuth; elevation; offset; gain; scan rate; data rate; data path; total lines; rescan begin and total; sun azimuth and elevation; anti-solar azimuth and elevation; event day and time of day; standard deviation; number of missing lines and gaps; percentage of missing data and source tape and file number.

Data set name - STEREO HIGH RESOLUTION

NSSDC ID 75-075C-06Q, STEREO HIGH RESOLUTION

Time period covered - (N/A)

Quantity of data - 8 REELS OF TAPE

These experimenter-supplied, stereo high-resolution data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters - satellite identification; camera number; diode; stepsize; channel/mode; azimuth; elevation; offset; gain; scan rate; data rate; data path; total lines; rescan begin and total; sun azimuth and elevation; anti-solar azimuth and elevation; event day and time of day; standard deviation; number of missing lines and gaps; percentage of missing data and source tape and file number.

Data set name - STEREO MOSAICS

NSSDC ID 75-075C-06R, STEREO MOSAICS

Time period covered - (N/A)

Quantity of data - 32 B/W NEGATIVE FRAMES

These negatives, provided by the experimenter, contain both standard vistereo and special vistereo. The special vistereo emphasizes or enhances certain topographic characteristics of the scene. Each negative is labeled either standard or special and contains information on the high-resolution mosaic it was produced from. It identifies whether the image is from the front or back of the Lander, and tells which eye, right or left, should view the image. The Image Processing Laboratory picture identifier (IPL picture ID) is expressed as the date of the processing of the image on the computer (yy/mm/dd/hhmmss).

Data set name - TOPOGRAPHIC MAP ATLAS OF LANDING SITE

NSSDC ID 75-075C-06T, TOPO MAP ATLAS-LANDING SITE

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set consists of two kinds of topographic map products generated from the stereo pictures : (1) elevation contours and (2) vertical profiles. The maps of the Viking 2 Lander site are in Part III. Also included are descriptions of the mapping techniques and indices. These maps cover the area from the immediate foreground of the Lander to 500 m out in both the front and back of the Lander. The ranging accuracy decreases approximately quadratically, with plus or minus 1 cm accuracy near the Lander to plus or minus 20 m at 100 m range. The maps were produced at scales ranging from 1:1 to 1:2000 and then reduced to half-size for incorporation in the book format.

Data set name - HIGH RESOLUTION LITHO MOSAICS

NSSDC ID 75-075C-06W, HIGH RESOLUTION LITHO MOSAICS

Time period covered - (N/A)

These mosaic lithographs are available through the US Geological Survey. For each of these mosaics there is a set of five sheets consisting of four single sheets for each sector, and a fifth sheet with the complete mosaic, with an image 9 inches high and 38 inches long. The one-sector sheets, each with an image 24 inches high by 30 inches long assembled together make a mosaic two feet high by 10 feet wide. The lithographs were made by standard procedures using a screen of 130 lines/inch. Each single sector lithograph product has two sets of fiducial scales bordering the image. One gives the azimuth angle from Mars north and the elevation angle relative to the nominal horizon. The second set gives the IPL line and sample number. The sector 1 sheet and sector 2 sheet cover lines 170 to 2250 and 2200 to 4320 respectively from the sector

1 and 2 800 bpi digtal tape. The sector 3 sheet anc sector 4 sheet lines cover lines 40 to 2160 and 2070 to 4190 respectively from the sector 3 and 4 800 bpi tape. There are approximately 90 lines of overlap of the scene between adjacent sector images. The fifth sheet for each mosaic has two 8-inch high by 38-inch long images of the completed mosaic scene. One is bordered by IPL line and sample numbers that reference the four-sector 1600 bpi digital tape for that mosaic. The second serves the same purpose as the reduced image in the single sector sheets, giving the relationship between rectified camera control coordinates and azimuth angles from Mars north. It also identifies the distance and size of rocks in the scene. These sheets have two other images of interest. One is a 7-inch diameter image of a polar stereographic projection of the mosaic. This is the "donut" projection. The second is an image acquired by the Viking Orbiter cameras showing the location of the Viking Lander.

Data set name - RANGE DATA SETS OVERLAIN ON LANDER MOSAICS ON MAGNETIC TAPE

NSSDC ID 75-075C-06X, RANGE DATA SET OVERLAYS DATA

Time period covered - (N/A)

Quantity of data - 9 REELS OF TAPE

These experimenter supplied, range data set products are on 9-track, 800 bpi, ERCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of a picture element (pixel) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label record is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters: satellite identification, camera no., diode, stepsize, channel/mode, azimuth, elevation, offset, gain, scan rate, data rate, data path, total lines, rescan begin and total, sun azimuth and elevation, anti-sun azimuth and elevation, event day and time of day, standard deviation, no. of missing lines and gaps, percentage of missing data, and source tape and file numbers.

Data set name - IMAGING DATA ON MAGNETIC TAPE (*)

NSSDC ID 75-075C-06Y, PLANETARY IMAGING DATA ON MAG TAP

Time period covered - (N/A)

Quantity of data - 40 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 6000 images obtained by the Viking 1 Lander TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 515 or more blocks, containing a variable number of bytes per block. The number of bytes per block is equal to the number of scan lines taken by the camera or 360, whichever is larger. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by Picno., an image sequence number, against tape/file position. For this reason, it is necessary to be able to identify the Picnos. of interest before placing an order.

VIKING 1 LANDER, BIEMANN
MOLECULAR ANALYSIS

Data set name - GAS CHROMATOGRAPH MASS SPECTROMETER SOIL ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-04A, GCMS SOIL ANALYSIS FLIGHT DATA

Time period covered - (N/A)

Quantity of data - 2 REELS OF TAPE

These data, on 9-track, 800-bpi, unlabeled, IBM-compatible tapes, are in raw form, just as they were received by the Viking experimenters from the telemetry decommutation program output, except that they have been put into logical order and gaps have been filled in. They are unlikely to be usable by anyone not very familiar with the mission operations and the instrument design. Each sample run, comprising one file on the tape, includes several spectral scans divided arbitrarily into small blocks. The quantities listed are the output of the analog-to-digital converter on a logarithmic scale as a function of time. Separate blocks of engineering data contain temperatures, pressures, and other instrument parameters.

Data set name - SOIL ANALYSIS MASS SPECTRA ON MAGNETIC TAPE

NSSDC ID 75-075C-04B, SOIL ANALYSIS MASS SPECTRA

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

The mass spectrum data, on 9-track, 800-bpi tapes, are reduced versions of the GCMS soil analysis data (75-075C-04A). Each sample run is on a separate file, and there is one record for each spectral scan, including mass spectrum data and engineering data. Listed is the intensity in arbitrary linear units as a function of mass number from 12 to 215 in the conventional mass spectrum format. The engineering information included permits conversion of intensities to current units.

Data set name - SOIL ANALYSIS MASS SPECTRA ON MICROFILM

NSSDC ID 75-075C-04C, SOIL ANAL CONSECUTIVE MASS SPECTR

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

The same data as on the mass spectra tapes are presented as bar graphs on 16-mm microfilm. Each frame contains one complete graph of the intensities of all masses detected. Because the lower masses (mostly CO2 and H2O) are predominant, a second graph starting at about mass 45 shows the heavy elements at a more appropriate scale. Graphs of engineering parameters are also included.

Data set name - GCMS ATMOSPHERIC ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-04D, GCMS ATMOSPHERE FLIGHT DATA

Time period covered - (N/A)

These data, on 9-track, 800-bpi tape, are the GCMS raw data for the atmospheric analyses. For the Viking 1 primary mission there were 4 filtered atmospheric samples with CO and CO2 removed, 17 unfiltered samples, and 3 samples after 10 enrichment cycles to increase the concentration of trace elements. For the Viking 2 primary mission there were 4 filtered atmospheric samples with CO and CO2 removed, 2 unfiltered samples, 1 sample after 5 enrichment cycles, 2 samples after 10 enrichment cycles, and 6 samples after 15 enrichment cycles. These tapes contain data in raw form similar to that on the soil analysis flight data tapes, but the data quantity is much less. The parameters are mass spectrometer electron multiplier output as a function of time for each measurement scan and the associated background scan.

VIKING 1 LANDER, HARGRAVES
MAGNETIC PROPERTIES

Data set name - INDEX OF MAGNET IMAGES ON MICROFICHE

NSSDC ID 75-075C-10A, INDEX OF MAGNET IMAGES ON M/FICHE

Time period covered - 07/20/76 TO 10/06/76 (As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

These data are on B/W microfiche generated at NSSDC from a hardcopy index supplied by the investigator. This index lists the Lander camera images taken of the magnet pairs mounted on the sampler arm and the Lander body. The listing contains the Martian day (sol); image reference number by ce label; resolution; if color, black and white, or infrared; if in the sun or shaded; and comments.

Data set name - MAGNET IMAGES ON ROLL FILM

NSSDC ID 75-075C-10B, MAGNET IMAGES ON ROLL FILM

Time period covered - 07/20/76 TO 10/06/76 (As verified by NSSDC)

Quantity of data - 37 B/W POSITIVE FRAMES

These data are on 5-in. B/W roll film generated at NSSDC from Lander camera images supplied by the Lander Imaging Team. These data are the best images of the magnet pairs taken by the Lander camera. They are also available as individual B/W

frames.

VIKING 1 LANDER, KLEIN
BIOLOGY

Data set name - GAS EXCHANGE, LABELED RELEASE, AND PYROLYTIC RELEASE DATA ON MICROFILM

NSSDC ID 75-075C-03F, GEX, LR, AND PR MEASUREMENTS

Time period covered - 07/20/76 TO 05/30/77
(As verified by NSSDC)

Quantity of data - 13 REELS OF MICROFILM

These data, supplied by the investigation team, are on 16-mm microfilm and consist of descriptions of the commands that were sent to operate the three instruments, and tabulations of raw and reduced data returned. The command data include Mars time for each experiment sequence, the commands sent, predicted data points for each command file that were used to time tag the data when it came back from the instrument, and a summary of the major events of each command sequence. These command data are identified as Biology/C. The tabulation/plot data include instrument response, time-tagged, engineering, and summary plot data. The instrument response data consist of raw return downlink data in octal form, the same data after basic reduction, and the time-tagged data in value point form. The time-tagged data are the primary reduced form of the data. These data are Mars Mission Time (MMT) of the data point, Local Lander Time (LLT), type of measurement, the value of the data point, and diagnostic information about each data point. Engineering data are included after the raw and reduced data. The fourth part of the data contains plots that summarize the data. The reduced data for the biology instrument are GEX chromatogram voltages, GEX nanomoles vs time plots, PR radioactivity vs time, LR counts/min summary, and time-tagged instrument values.

VIKING 1 LANDER, MICHAEL, JR.
LANDER RADIO SCIENCE

Data set name - DOPPLER AND RANGE TRACKING DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-11B, RANGE + DOPPLER DATA

Time period covered - 06/20/76 TO 01/28/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the Radio Science Team, is contained on 7-track, 800-bpi tapes that are merged and reformatted versions of the original project tracking tapes, and have essentially the same format as the Orbiter tapes. Each record contains all, or a subset of, the following parameters: time, Doppler frequency, range (i.e., light time in nanoseconds), and certain tracking station information. Spacing between Doppler points is usually 10 s; between ranging points it is from 2 to 20 min. Each tape contains data from one spacecraft. A set of IBM cards listing the range hardware delay calibration data is included with these data. The calibrations are given for the combined effect of the signal delays caused by both a tracking station's equipment and the spacecraft transponder.

Data set name - DECALIBRATED LANDER RANGE DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-11C, DECALIBRATED RANGE DATA TAPES

Time period covered - (N/A)

This data set, supplied by the Radio Science Team, is contained on 7-track, 800-bpi tapes. For the 'good' range points, which are a subset of the range points on the tracking data tapes (75-075C-11B), the results of an extensive calibration program are presented. The parameters listed are time, uncorrected range in nanoseconds, correction for time delay in the Lander transponder, correction for time delay in the tracking station equipment, correction for the interplanetary plasma effect (from near-simultaneous Orbiter S- and X-band data), and final corrected range. The final corrected range should be the best obtainable value of the range between the tracking station antennas and the Lander.

VIKING 1 LANDER, NIER
ENTRY SCIENCE ATMOSPHERIC STRUCTURE

Data set name - ATMOSPHERE TEMPERATURE AND PRESSURE LISTINGS ON MICROFICHE

NSSDC ID 75-075C-02A, ATMOS TEMP + PRESS LSTNGS, MFICH

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of tables and listings, filmed by NSSDC from data supplied by the experimenter, of atmospheric pressure and temperature measured during the Lander entry phase including the parachute descent. The tables give the time (s), atmospheric pressure (mb), altitude (km), vehicle velocity (m/s) and the temperature (deg K). The listings give the altitude measured by the radar altimeter, the axial acceleration, the normal acceleration in the plane of the lift vector, the relative velocity, the relative flight path angle, the relative heading angle, and the areocentric latitude and longitude.

VIKING 1 LANDER, NIER
ENTRY SCIENCE NEUTRAL ATMOSPHERIC COMPOSITION

Data set name - TIME-ORDERED MASS SPECTRA PLOTS ON MICROFILM

NSSDC ID 75-075C-12A, NEUT. ATMOS. MASS SPECTRA ON FILM

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy data plots supplied by the investigation team. These data include time-ordered mass spectra plots displayed on a semilog graph. The ordinate scale is ion current, and the linear abscissa scale is word number. Beneath the abscissa is printed spacecraft time (measured from the time of deorbit) and universal time. With the accompanying documentation, it is possible to convert current values to ambient particle number densities, word number to atomic mass, and time into altitude in kilometers.

Data set name - TIME-ORDERED ION CURRENT LISTINGS ON MICROFILM

NSSDC ID 75-075C-12B, TABLES OF M.S. CURRENTS ON FILM

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy tabulated data provided by the investigation team. These data consist of the time-ordered ion current listings from which the mass spectra plots were produced. The items tabulated include: word number, frame number, electrometer current readings, and gain step. At the end of the film are additional ion current data not in temporal order and miscellaneous housekeeping data. The accompanying documents permit the conversion of current to ambient particle number density, word number to atomic mass, and time to altitude in kilometers.

VIKING 1 LANDER, NIER
ENTRY SCIENCE IONOSPHERIC PROPERTIES

Data set name - TRAJECTORY AND ATTITUDE DATA ON TAPE

NSSDC ID 75-075C-14A, EXP.TRAJECT.-ATTITUDE DATA, TAPE

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the investigation team, are on 9-track, binary, 1600-bpi, unlabeled tape, and contain trajectory and attitude data for the Viking 1 and 2 Landers. There is one file for each spacecraft. Each record in a file contains the following parameters: time in seconds from deorbit; velocity in km/s; altitude above Mars' mean surface in kilometers; and flight angle, heading angle, sub-Lander latitude, sub-Lander longitude, RPA angle of attack, UAMS angle of attack, RPA sun angle, and zenith angle all measured in degrees.

Data set name - RPA ION AND ELECTRON DATA ON TAPE

NSSDC ID 75-075C-14B, RPA ION-ELECTRON DATA ON TAPE

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the investigation team, are on 9-track, 1600-bpi, binary tape. The data contain the complete record of the collected current vs retarding potential as a function of time for both Landers in both the electron and ion modes. There are four files on this tape, and each record contains time in seconds from deorbit, sequential frame number, major frame number, and pairs of retarding potential and collector current values.

Data set name - RPA ION AND ELECTRON DATA ON MICROFILM

NSSDC ID 75-075C-14C, RPA ION-ELECT. DATA ON 35MM FILM

Time period covered - 07/20/76 TO 07/20/76
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

These data, supplied by the investigation team, are on 16-mm microfilm. The data are essentially the same as the magnetic tape data set (75-075C-14B) and include current vs retarding potential plots for each individual sweep in the energetic electron mode; similar plots for thermal ions with the least-squares fit to the theoretical equation to determine concentrations, temperature, and other parameters; and time plots of altitude, velocity, and pertinent angles to define the instrument environment during the entry.

VIKING 1 LANDER, SHORTHILL
PHYSICAL PROPERTIES

Data set name - PUBLISHED REPORTS ON THE RESULTS OF THE PHYSICAL PROPERTIES EXPERIMENT

NSSDC ID 75-075C-01A, PHYSICAL PROPERTIES REPORTS

Time period covered - (N/A)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of reports published by the investigation team that discuss the results of the Physical Properties Experiment. The reports discuss the hardware used, the results of tests using the systems test bed, the results of the imaging science tests, and the results of the science end-to-end tests. The approximate dates of the tests and the elements tested are also discussed. It is emphasized that the results are preliminary and, therefore, subject to change.

VIKING 1 LANDER, TILLMAN
METEOROLOGY

Data set name - SANMET LISTINGS OF TEMPERATURE AND VECTOR WIND VS TIME

NSSDC ID 75-075C-07A, SANMET TEMP+VCTR WND VS TIME-LIST

Time period covered - 07/20/76 TO 05/16/77
(As verified by NSSDC)

Quantity of data - 1522 CARDS OF B/W MICROFICHE

This data set, on B/W microfiche, consists of a copy of the computer printout of the science analysis of meteorology (SANMET) program, which presents all the information about every measurement that was available to the Viking Meteorology Science Team. Raw data (instrument voltage readings), reduced data, and statistical summaries are included. Much of the information is redundant or of no value to the user. For each Mars day there are four sets of data listings: (1) instrument voltage outputs (raw data); (2) calculated voltage, resistance, and temperature values; (3) wind and temperature data in geophysical units; and (4) pressure data in geophysical units. There is also information on the data base input that controlled the SANMET run and on parity errors in the data. The reduced data (items 3 and 4) were used to prepare the abridged data sets -07B and -07C.

Data set name - HIGH TIME RESOLUTION PLOTS OF VECTOR WIND AND TEMPERATURE VS TIME (SECONDS)

NSSDC ID 75-075C-07B, VECTOR WIND/TEMP VS TIME(SEC)PLTS

Time period covered - 07/20/76 TO 07/20/78
(As verified by NSSDC)

Quantity of data - 17 REELS OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy reduced data plots prepared by the experimenter. The data consist of plots of three parameters (wind speed, wind direction, and temperature) vs time (Mars seconds) elapsed since the beginning of the measurement. Such information as earth start and stop times of the observaton is printed at the top of each frame. Normally there is one 5-min observing period for each Mars hour, except that the first observing period each day is for 10 min. Each plot displays relatively fine time scale data taken for one of the hourly observation periods.

Data set name - LOW TIME RESOLUTION (AVERAGE) PLOTS OF VECTOR WIND AND TEMPERATURE VS TIME (HRS)

NSSDC ID 75-075C-07C, VECTOR WIND/TEMP VS TIME(HRS)PLTS

Time period covered - 07/20/76 TO 08/29/78
(As verified by NSSDC)

Quantity of data - 5 REELS OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy analyzed data prepared by the experimenter from the reduced data in data set 75-075C-07B. The data consist of series of three film frames, one frame each for wind speed, wind direction, and temperature. Each plotted point is obtained by averaging all observations taken during one Mars hour (module). Each plot depicts daily parameter variations for a particular day.

Data set name - METEOROLOGY PRESSURE DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-07D, METEOROLOGY PRESSURE TAPE

Time period covered - 07/19/76 TO 09/02/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data are written on magnetic tape and are 7-track, 800-bpi, even parity, BCD, unlabeled. The data were created on a Univac 1108 computer. Each physical record consists of 10 logical records of 20 characters. The data are contained on 44 files and consist of a sol header record and data records. Each header record contains a flag (always-9), Viking Lander no., sol, no. of groups in sol, no. of points rejected, and mean pressure of the sol (mb). Each data record consists of a flag (always+9), local Lander time of record, no. of points comprising group (record), and mean pressure of the group (record). This format is the same for Viking 2 Lander meteorology pressure data (75-083C-07D).

Data set name - METEOROLOGY WIND TEMPERATURE DATA ON MAGNETIC TAPE

NSSDC ID 75-075C-07E, METEOROLOGY WNDTMP TAPE

Time period covered - 07/19/76 TO 09/02/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data are written on magnetic tape and are 7-track, 800-bpi, even parity, BCD, and unlabeled. The data were created on a Univac 1108 computer. Each physical record is one logical record of 120 characters. The data are contained on 44 files with each file containing data for one sol. Each file consists of module header records followed by data records for the module. The header records contain the module no., start time, Lander epoch, sol no., data quality indicator, Lander no., and sample interval. The data records contain minimum, maximum, average and standard deviation values for wind speed, wind angle, thermocouple temp., and reference sensor temp., plus sums of all flags, parity flags, and all missing values, average time, and average platinum resistance temperature. This format is the same for Viking 2 Lander meteorology wind and temperature data (75-083C-07E).

Data set name - DAILY PLOTS OF WIND, TEMPERATURE AND PRESSURE

NSSDC ID 75-075C-07F, DAILY PLOTS OF WNDTMP + PRESSURE

Time period covered - 07/20/76 TO 09/01/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were filmed by the NSSDC from plots provided by the team leader. The plots consist of two consecutive sols plotted continuously. The upper left corner contains the Lander number and the sol day number. Immediately below this is the value of the areocentric longitude of the sun, in degrees, at midnight of the indicated sol. The time scale is in hours of local Lander time. The times of sunrise, noon, and sunset are indicated by long tick marks on the upper border of the plot. The temperature plots are plotted at the mean time of each data record and connected by straight lines. The pressure data are taken from the pressure catalog produced at Florida State University (FSU). The pressure scale uses a nominal range of 10 mb which may shift up or down to fit the data. The pressure plots are connected by a dashed line. The winds plotted are derived from the wind and temperature catalog produced at FSU. The wind plots are in standard meteorological notation with a half arrow and barbs. For direction North is at the top and West is at the left. On the bottom of the shaft each full barb represents 2 m/s, which a half barb represents 1 m/s. Five full barbs are allowed totally 10 m/s. For larger winds the right scale of the shaft is used. Each full barb on the right side represents 10 m/s. Five full barbs on both right and left represents 60 m/s. For still stronger winds the value of all barbs is doubled and a stroke is placed across the tip of the half arrow to denote this doubling. Winds in excess of 120 m/s are given as a half arrow with no barbs but a square at the tail of the arrow. A wind of less than 0.5 m/s is considered calm and represented by a circle around the time of data.

Data set name - PRINTED PRESSURE AND WIND, TEMPERATURE CATALOG

NSSDC ID 75-075C-07G, PRINTED PRESS + WINDTMP CATALOG

Time period covered - 07/20/76 TO 10/18/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data, filmed by NSSDC from hardcopy supplied by the team leader, consist of the meteorology pressure catalog and the meteorology wind and temperature catalog. The pressure catalog has one page for each sol per Lander. The pages are numbered begining with 0 for each Lander. There is a header, on each page, which contains: (1) the Lander number, (2) sol number, (3) number of groups in the sol, (4) number of points repeated, (5) page number and (6) the mean pressure for the sol. Items 3 and 4 are more fully explained in the documentation section, preceding the catalog data, on the microfilm. The wind and temperature catalog also has headers for each page of data. The headers consist of (1) page and sol number with (a) the header number, (b) the sol number, (c) the data of the SANMET computer run, (d) the SANMET program used; (2) module headers with (a) the module number, (b) the time of start of module in UT, (c) the sample interval in seconds, and (d) a data quality indicator; (3) column labels with (a) rec-record number within the module, (b) hours - the mean lst of the record in hours, (c) speed sigma max min- for columns referring to wind speed, (d) angle sigma max- for columns referring to wind direction, (e) amp T sigma max min-four columns referring to ambient temperatures, (f) ref T sigma max min-four columns referring to temperature measured by the wind reference sensor, (g) plat- the mean for the record of the values from the platinum resistance thermometer, (h) p- information on a certain class of parity errors detected by SANMET, (i) f- information on whether SANMET rejected one or more measurement points, (j) m- the number of missing samples in a record and, (k) i- an indication of the possible unrepresentativeness of the data because of flow from the Lander body towards the meteorological sensors. A more complete explanation of these headings can be found in the documentation of Viking meteorology wind and temperature catalog which precedes these data on the microfilm reel.

Data set name - WIND AND TEMPERATURE CATALOG ON MAGNETIC TAPE

NSSDC ID 75-075C-07H, WIND AND TEMPERATURE CATALOG

Time period covered - 07/20/76 TO 09/14/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter supplied, wind and temperature catalog data are on 9-track, 1600bpi, ASCII magnetic tape created on a Univac 1108 computer. The data are means and other statistics for each record of observation (sol), consisting usually of 16 samples. The records are blocked with thirty, 120 character fixed length lines each. Two types of lines are contained on each file: module header lines followed by data lines for the module. Each header line contains module no.; start time for the module in year, day of year, hour and minute; start time in local Martian Lander time; data quality indicator; start time in s, and time in s between samples. Each data line contains the record no. within a module; highest and lowest wind speeds; the amount (in deci-degrees) by which the wind direction departs from the vector mean direction; the amount by which the max./min. temp. is above/below the mean thermocouple temp. and reference sensor temp.; no. of missing samples in the record; mean local Lander time in hr; vector mean wind speed and arithmetic standard deviation of wind speeds in meters per s; vector mean wind direction in deg; standard deviation of wind direction from the vector mean wind direction; arithmetic mean thermocouple temp. and reference sensor temp. and standard deviation of those temps. in deg K; and the mean for the record of the values from the platinum resistance thermometer in the boom housing.

Data set name - SOLAR AVERAGE PRESSURE DATA - PLOTS AND LISTINGS (*)

NSSDC ID 75-075C-07I, SOL AVG PRESS,PLOTS & LISTING

Time period covered - (N/A)

Quantity of data - 3 CARDS OF B/W MICROFICHE

This data set consists of two types of plots of Martian daily average pressure data. The mean pressure data (in millibars), retrieved from the sol average pressure tape (NSSDC 75-075C-07J), are derived from individual measurements that are sampled at intervals of 30 to 90 min. They are time-weighted daily average pressure with certain assumptions regarding gaps of longer than 3 h. Depending on the location of the gaps and their length, missing data are either filled in by interpolation or by extrapolation, or are excluded from the time-weighted statistics. The first type of plot has data presented in 670-sol blocks. The lower panel has the sol average pressure values plotted against time (in sols, normalized to local midnight). The upper panel illustrates the maximum time gap (in hours) in the same time period as that of the lower panel. The second type of plot has data presented in 100-sol blocks. The lower panel has the daily average pressure values from both Viking Lander 1 and Viking Lander 2 plotted against time. The upper level panel illustrates the standard deviations for both Lander 1 and Lander 2. The standard deviations provide crude indications of synoptic activity at both Lander 1 and Lander 2, and of dust-generated tides at Lander 1. Where time gaps are longer than 6 h, data are excluded from both types of plots. Altogether there are 2245 sols of data plotted for Lander 1 and 1050 sols of data for Lander 2. Notice that on the plots Lander 2 data begin on sol 44 because of its delay in landing relative to Lander 1. For more information, refer to the "Atmospheric Pressure Statistics From the Surface of Mars: the Viking Meteorology Experiment," by J. E. Tillman, available at NSSDC on the data tape that is mentioned above.

Data set name - SOLAR AVERAGE PRESSURE DATA ON MAGNETIC TAPE (*)

NSSDC ID 75-075C-07J, SOL AVERAGE PRESSURE TAPE

Time period covered - 07/20/76 TO 11/12/82
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This experimenter-supplied data set consists of Martian daily average pressure data written on a 9-track, 1600-bpi, ASCII, unlabeled tape by a Prime computer. The mean pressure data (in millibars) are derived from individual measurements that are sampled at intervals of 30 to 90 min. They are time-weighted daily average pressure values with certain assumptions regarding gaps longer than 3 h. Depending on the location of the gaps and their length, missing data are either filled in by interpolation or extrapolation, or are excluded from the time-weighted statistics. Besides the average pressure, other parameters are provided for each sol including minimum pressure, standard deviation, length of maximum time gap, starting and ending times of large gaps, and other supporting information. There are two separate copies of data from each Lander, including a total of 2245 sols of Lander 1 average pressure values available on the tape. For more information, refer to the "Atmospheric Pressure Statistics From the Surface of Mars: the Viking Meteorology Experiment," by J. E. Tillman, available at NSSDC on the data tape. It should be noted that all records of the Lander 1 data contain 4400 ASCII characters, but the last tape record of the Lander 2 data is only 800 characters long, contrary to the format given in the descriptive document.

VIKING 1 LANDER, TOULMIN, 3RD
INORGANIC ANALYSIS

Data set name - SPECTRA PLOTS ON MICROFICHE
(*)

NSSDC ID 75-075C-13A, SPECTRA PLOTS ON M/FICHE

Time period covered - 11/13/75 TO 02/23/78
(As verified by NSSDC)

Quantity of data - 44 CARDS OF B/W MICROFICHE

This data set consists of B/W microfiche provided by the investigation team containing logarithmic plots of the data in the spectral history file (see 75-075C-13E). The title on each plot includes Lander ID , spectrum number, pc tube, sample or calibration information, command history information, count period (if other than 7.7 s), operator, detector voltage, and date. The X-axis represents energy (channel number), and the Y-axis represents intensity that has been normalized to reflect a 30.7-s count period/channel. The pc 1 and 2 data represent the iron-55 radiation source information while pc 3 and 4 data represent the cadmium-109 information.

Data set name - COMMAND, SPECTRA, AND TEMPERATURE HISTORY ON MAGNETIC TAPE

NSSDC ID 75-075C-13E, COMMAND, SPECTRA, TEMP HIST MTAPE

Time period covered - 07/20/76 TO 10/29/76
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

These data are on 7-track, 800-bpi, BCD, even parity magnetic tape supplied by the investigation team. Each tape contains three files. The command history (file 1) contains the instrument parameters that were sent to the guidance control and sequencing computer (GCSC). The file consists of a header; the number of commands in each group; the number of the first command in each group; the purpose; the command table number; the number of the offset entry; the pc tube number; the high-voltage bias; the code used to identify dump, flag, or sample information; the count period per channel; the window group (start channel); the execution time; the time in seconds to begin execution on Mars; and the predicted number of data frames. The temperature history file (file 2) contains temperature measurements in the XRFS box. The file consists of a header, the total number of temperature groups as provided by the Viking data software (each group contains a maximum of 675 measurements), the number of groups stored in the file, the temperature readings in the XRFS box, and the GCSC time (in seconds) when each temperature was measured. The spectral history file (file 3) contains the instrument response data. The file consists of a header, the spectrum name, raw spectrum data normalized to a count time of 30.7 s per channel, the pc tube that generated the spectrum, the time and date the spectrum was assembled at JPL, the data frame numbers used to make the spectrum, the count period for each data frame, and the name of the operator who generated the spectrum.

Data set name - COMMAND HISTORY ON MICROFICHE

NSSDC ID 75-075C-13F, COMMAND HISTORY ON M*FICHE

Time period covered - 07/21/76 TO 11/24/79
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set, on black and white microfiche, provided by the investigation team, contains instrument parameters that were sent to the guidance control and sequencing computer (GCSC). The tabular files consist of a header, the number of the first command in each group, the purpose of command, the command table number, the pc tube number, the high voltage bias, the code used to identify dump, flag or sample information, the execution time, the predicted number of data frames and GCSC time.

Data set name - TEMPERATURE HISTORY ON MICROFICHE

NSSDC ID 75-075C-13G, TEMPERATURE HISTORY ON M*FICHE

Time period covered - 07/21/76 TO 12/05/79
(As verified by NSSDC)

Quantity of data - 20 CARDS OF B/W MICROFICHE

These data, on black and white microfiche, provided by the investigation team contain temperature measurements, in the order received from the decset, in degrees Fahrenheit. The measurements are further listed after sequencing by time. The guidance control and frequency computer time, in seconds, is listed as are the sol, Mars local time in hours and minutes, and the temperature in degrees and tenths of degrees. The temperature history is arranged by group with each group containing a maximum of 675 measurements.

********** VIKING 1 ORBITER **********

Data set name - BIBLIOGRAPHY OF THE VIKING MARS SCIENCES

NSSDC ID 75-075A-00D, BIBLIOGRAPHY OF VIKING MARS SCI

Time period covered - (N/A)

Quantity of data - 1 CARD OF B/W MICROFICHE

This is the first edition, published May 18, 1978, of a bibliography of the scientific results of the Viking missions, the two Landers and the two Orbiters. It attempts to include every publication in a scientific journal of the experimental results, or theoretical interpretation of the Viking data, descriptions of the scientific instruments that might be of value to scientists utilizing these data, and a few general papers or books summarizing the results or describing the mission operations and history. This bibliography does not include abstracts or presentations at scientific meetings, accounts in newspapers and popular magazines, and scientific discussions of Mars that are not directly related to the information acquired by the Viking spacecraft.

VIKING 1 ORBITER, CARR
ORBITER IMAGING

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-075A-01A, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 04/12/76 TO 11/22/78
(As verified by NSSDC)

Quantity of data - 50 B/W NEGATIVE FRAMES

This data set consists of 4- x 5-in. B/W negatives that were released by the project for public distribution. Some are individual frames or mosaics of potential landing sites taken early in the mission. The rest were chosen to show features of particular interest. Descriptions of each photograph are included.

Data set name - B/W RECTILINEAR PHOTOGRAPHY

NSSDC ID 75-075A-01B, RECTILINEAR ORBITAL PHOTOGRAPHY

Time period covered - 11/20/76 TO 08/15/80
(As verified by NSSDC)

Quantity of data -33100 B/W POSITIVES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and represent the surface as viewed from the Orbiter scan platform without geometric corrections for oblique-viewing distortion. Most images are available in two processed versions: (1) the shading corrected (SCR) version, suitable for albedo contrast and photogrammetric studies; and (2) the high-pass filtered (NGF) version, which provides maximum feature discriminability (at the cost of true albedo contrast). Both versions have been processed to remove or fill in telemetry bit errors, camera blemishes, and nonuniformities in vidicon response. Corrected data are then linearly stretched in contrast to fill the dynamic range of the film. Each processed picture has a data block containing all pertinent information for the image. To select these data, use the SEDR (75-075A-01E); the rectilinear and orthographic photography index (75-075A-01L); the quadrant, latitude, and longitude index (75-075A-01M); or the 10-deg box index (75-075A-01I). In ordering, specify both the picno and the roll/file number.

Data set name - B/W ORTHOGRAPHIC PHOTOGRAPHY

NSSDC ID 75-075A-01C, ORTHOGRAPHIC ORBITAL PHOTOGRAPHY

Time period covered - 07/23/76 TO 05/13/77
(As verified by NSSDC)

Quantity of data -16743 B/W POSITIVES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and are a subset of the total image set that has been transformed to an orthographic mapping projection, so that the scene appears as if viewed from directly overhead. The center of projection in all cases is the center point of the frame. To preserve maximum discriminability of features, the size of the projected image is formatted to fill, as nearly as possible, the mask dimensions (1584 pixels square). Therefore, the scale will

vary from image to image in a series. This is especially evident in those sequences obtained at periapsis when the viewing geometry and range are changing most rapidly. The scale of each image is given in the data block under SCO (km/pixel). A scale bar to the right of the image facilitates photographic reconstruction of a series of images to a similar scale. Not all images are available in the orthographic version. Most orthographic images available were produced in the NGF version and, therefore, do not present true albedo characteristics. To select these data, use the SEDR (75-075A-01E); the rectilinear and orthographic photography index (75-075A-01L); the quadrant, latitude, and longitude index (75-075A-01M); or the 10-deg box index (75-075A-01I). In ordering, specify both the picno and the roll/file number.

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-075A-01D, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 06/18/76 TO 03/03/77
(As verified by NSSDC)

Quantity of data - 7 COLOR POSITIVE FRAMES

This data set consists of 4- x 5-in. color negatives released by the project for public distribution. Because of color inaccuracies in reproduction, the coloring cannot be considered accurate. It is not possible to reproduce accurately the red spectral range that would be perceived by the human eye, because of a lack of adequate data.

Data set name - SEDR PHOTOGRAPHIC SUPPORT DATA ON MICROFILM

NSSDC ID 75-075A-01E, SEDR SUPPORT DATA ON MICROFILM

Time period covered - 06/23/76 TO 09/20/76
(As verified by NSSDC)

Quantity of data - 4 REELS OF MICROFILM

This data set consists of Supplementary Experiment Data Record (SEDR) on microfilm for the orbital photography on the Viking 1 Orbiter and will be the only catalog available for the Orbiter photography. Information supplied in these listings is: picture identification number (Picno) by which it is arranged; camera information such as exposure time, filter used, and which camera; coordinates of center reticle of frame, and processing laboratory and versions of photos, e.g., albedo stretch or maximum discriminability; and mosaic or stereo comments. Definitions of the parameters precede the table. The main table is followed by a one-line listing of the photographs ordered by latitude, proceeding from south to north. This listing contains only the Picno, latitude and longitude of center reticule of each photograph.

Data set name - MOSAICS MADE FROM THE BLACK AND WHITE DEGREE BOX ON MICROFICHE (*)

NSSDC ID 75-075A-01F, B/W MOSAICS

Time period covered - (N/A)

Quantity of data - 503 B/W POSITIVE FRAMES

These data, supplied by the Orbiter Imaging Team, are 4- x 5-in. B/W mosaics. Hand-rendered mosaics are available for much of the coverage obtained by the Viking Orbiter cameras. For the most part, these mosaics provide contiguous coverage of scenes made up from individual images, and no attempt has been made to conform to a global control net. Measurements made from these mosaics will be highly inaccurate. Mosaics produced by the United States Geological Survey (USGS) designated as mc quads or mc subquads and built upon the appropriate shaded relief map are valid mapping coverage. Each mosaic, identified by the prefix 211- and a four-digit number, is supplied with a footprint plot providing the individual picno as well as roll and file order numbers for the individual frames making up the mosaic. All of these numbers should be specified when ordering individual frames. In a few cases where the particular version of a frame in the mosaic is not available, a similar version of that frame is designated on the footprint plot. The mosaic summary and index (75-075A-01J) should be used to select these data.

Data set name - B/W STEREO PAIRS

NSSDC ID 75-075A-01H, STEREO PAIRS 5X5-INCH FILM

Time period covered - 06/23/76 TO 04/22/77
(As verified by NSSDC)

Quantity of data - 28 B/W POSITIVE FRAMES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and consist of frames identified as having overlapping coverage. Frames should be ordered in the orthographic version for stereo studies. It should be understood that the visual imaging subsystem on the Viking orbiters was not well adapted for acquiring stereo data, and that their acquisition was not a major objective of the primary mission. The pairs contain significant but variable amounts of overlap. In some cases the two frames were taken at widely different times so that lighting conditions did not match well. Stereo coverage of higher quality and greater quantity was obtained in the extended mission.

Data set name - INDEX BY LATITUDE, LONGITUDE, AND 10 DEGREE BOX ON MICROFICHE

NSSDC ID 75-075A-01I, INDEX BY LAT/LON AND 10 DEG BOX

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set, supplied by the Orbiter Imaging Team, is on B/W microfilm. It consists of two indexes: one lists the images by center latitude, and the other lists the images by 10-deg boxes of latitude and longitude. The first box is at 0-deg longitude and the north pole, and covers the area 0-deg to 10-deg W longitude and 90-deg to 80-deg N latitude. The second box is 10-deg to 20-deg W longitude and 90-deg to 80-deg N latitude. The latitude and longitude of the intercept point 5 (center of image) are used for these computations, and only images where the intercept point 5 is on the planet (ema5 lt 90 deg) are listed. Each index contains these parameters: picno; frame start count (FSC) number; center latitude; center longitude; emission angle, the angle between the surface normal and the line to the spacecraft; incidence angle, the angle between the surface normal and the line to the sun; range to surface; and Mars time.

Data set name - MOSAIC SUMMARY AND INDEX ON MICROFILM

NSSDC ID 75-075A-01J, MOSAIC SUMMARY AND INDEX,MFILM

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of an indexed summary of Viking Orbiter mosaics. The information given in tabular form is: (1) identification number, (2) mosaic ID, (3) comments (area or features in view), (4) production time, (5) revolution number, (6) number of images mosaicked, (7) minimum latitude, (8) maximum latitude, (9) minimum longitude, and (10) maximum longitude. This listing is followed by an index ordered by PICNO number that cross-references the page number of the mosaic in the previous listing. Information given in this listing is: (1) PICNO, (2) central latitude, and (3) central longitude of each photo in the mosaic.

Data set name - PHOBOS, DEIMOS, STAR, TERMINATOR, AND LIMB IMAGES INDEX ON MICROFILM

NSSDC ID 75-075A-01K, INDEX TO PHOBOS, DEIMOS, STAR

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set is an index of images of the Martian moons, stars, Mars terminator, and Mars limb on microfilm generated at NSSDC from hardcopy supplied by the Orbiter Imaging Team. It lists picno; filter; exposure; the range from the Orbiter to Phobos, Deimos, and the limb of Mars; and the surface coordinates of the corner or center of the picture, if Mars appears in the picture. A "terminator" picture is defined as a picture for which at least one corner is on the unlighted portion of the Mars surface. A "limb" picture has at least one corner off the surface entirely.

Data set name - RECTILINEAR AND ORTHOGRAPHIC PHOTOGRAPHY INDEX ORDERED BY ROLL/FILE NUMBER

NSSDC ID 75-075A-01L, RECT + ORTHO INDEX BY ROLL FILE

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set is on B/W microfiche generated at NSSDC from hardcopy supplied by the Orbiter Imaging Team. The data are an index to the rectilinear (75-075A-01B) and orthographic (75-075A-01C) photography, and are sorted by roll/file number. The index lists the picture number (picno) and the version (PROCLAB).

Data set name - INDEX OF IMAGES ORDERED BY QUADRANT, LATITUDE, AND LONGITUDE ON MICROFILM

NSSDC ID 75-075A-01M, LIST OF IMAGES BY QUAD, LAT/LONG

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

These data, supplied by the Orbiter Imaging Team, are an index of rectilinear, orthographic, and mosaic images ordered by quadrant, latitude, and longitude on 16-mm microfilm. A quadrant is one of the 30 sections into which the Mars surface is divided on the set of USGS 1:5,000,000 scale maps. The information listed includes picno, center latitude, center longitude, incidence angle, emission angle, filter, range to surface, SCR-2 version, NGF version, orthographic projection version, and four possible mosaic appearances. This is considered the best and most complete index for ordering Orbiter images from NSSDC.

Data set name - IPL PROCESSING OF THE VIKING ORBITER IMAGES ON 5-INCH FILM

NSSDC ID 75-075A-01N, IPL PROCESSED PHOTOGRAPHY

Time period covered - 11/08/76 TO 03/26/79
(As verified by NSSDC)

Quantity of data - 300 B/W POSITIVE FRAMES

This data set consists of all of the IPL processed photography provided by the Orbiter team. The photography includes such things as contour mapping, stereo coverage, etc.

Data set name - PRIME AND EXTENDED MISSION CATALOG ON MICROFICHE

NSSDC ID 75-075A-01O, PRIME, EXT, CONT MISSION PIC CAT

Time period covered - (N/A)

Quantity of data - 503 CARDS OF B/W MICROFICHE

This data set is on B/W microfiche supplied by the Orbiter Imaging Team. The microfiche cards are in COSATI format with 60 images per card. The top row of each card contains descriptive information such as (1) spacecraft identification and sequence number, (2) gray scale control, (3) resolution control frame, (4) first and last picno's on the card, and (5) any MTIS target frames that may have accompanied the images on the card. The images are arranged by picno and version. The primary mission is on cards 1-164 with approach science sequences 168C09-170C49 on cards 1-3 and revs 003A01-136A34 on cards 4-164. The extended mission is on cards 165-312 which contain revs 175A08-398A48. The continuation mission is on cards 313-527, and contain revs 400A01-618A56. The primary mission ended when the communications link between Mars and earth was degraded and temporarily lost due to solar conjunction. This explains the gap in the revs between the primary and extended mission. All the cards contain 2 versions per image except cards 4-36 which have 3 versions per image. Microfiche quality is sufficient for ordering individual images; however, it is not intended for scientific analysis.

Data set name - IPL PROCESSED FALSE COLOR RECONSTRUCTED ORBITER IMAGES (*)

NSSDC ID 75-075A-01P, IPL PROCESSED COLOR PHOTOGRAPHY

Time period covered - 07/30/76 TO 07/30/76
(As verified by NSSDC)

Quantity of data - 25 COLOR NEGATIVE FRAMES

This data set consists of color images reconstructed by the Image Processing Laboratory (IPL) of the Jet Propulsion Laboratory. Color elements of the same scene shuttered three times, seconds apart, are recombined using software developed for this purpose. These triplets are usually obtained by using the red, green and violet filters; however, in some cases the blue filter is substituted for the violet. In false color reconstruction, it is necessary to take many "perceptions" into account. Each frame is produced in two ways. The first is the Martian surface as the computer says it must be within a perceptual range of what a group of viewers say they will tolerate. This, in combination with color distortions generated by the GRE (playback device), film, photographic paper, and photolab procedures, produces images which vary slightly in color. The second production is not limited by perceptual parameters.

Data set name - USGS PHOTOMOSAIC COLOR NEGATIVES

NSSDC ID 75-075A-01Q, USGS COLOR PHOTOMOSAICS

Time period covered - (N/A)

Quantity of data - 94 COLOR NEGATIVE FRAMES

This data set consists of 8X10-in color negatives of various scenes on Mars on Mercator projection as provided by the US Geological Survey Image Processing Section. The photos show the color and relative albedo of Mars as closely as possible with Viking data. Variations in density of approximately 0.15 have been noted between frames, caused by inconsistencies in processing but the variations are not present in the final computer mosaics. The brightest areas on the brightest pictures have an albedo of about 0.25, and the darkest areas on the darkest pictures are of about albedo 0.09. The K in Picno is used to distinguish that it is a color photo, and the numerals correspond to the number of the green number of the set used to make the color composite. The pictures are accompanied by data blocks and color wedges below them. The data blocks give information on picture exposures and process, zenith angles, altitudes of spacecraft, sub-solar point angle, Mercator projection longitude and latitude, scale, spacecraft number, and orbit number. A clear film overlay for the 1:25,000,000 topographic map of Mars showing the location of each scene accompanies the data set.

Data set name - USGS PHOTO MOSAICS 5M

NSSDC ID 75-075A-01R, USGS PHOTOMOSAICS 5M

Time period covered - (N/A)

Quantity of data - 179 B/W NEGATIVE FRAMES

This data set consists of black and white 8 x 10 in negatives of photomosaics, controlled by the 1:5 million Mariner 9 and Viking data, produced by the USGS at Flagstaff, Az. The images are mosaics of Viking 1 and Viking 2 Orbiter high-resolution pictures placed on an air-brushed background based on earlier data from Mars. The mosaics were created at 1:1.25 million and scaled to 1:5 million. Each mosaic covers the areal surface for the Mars subquadrangle maps. The legend of the mosaics includes the Mars subquadrangle map number and the center coordinates in deg of Longitude and latitude. Longitude and latitude lines at 5 deg intervals are shown where the base image is not covered by the Viking mosaics. Mosaic coverage of the subquadrangle areas varies depending on available images at the time of creation of the mosaics. Footprint sketches showing the Viking picture numbers accompany the mosaics. These picture numbers can be used in ordering individual frames making up the mosaics.

Data set name - USGS PHOTOMOSAICS 7.5M (*)

NSSDC ID 75-075A-01S, USGS PHOTOMOSAICS 7.5M

Time period covered - (N/A)

Quantity of data - 155 B/W NEGATIVE FRAMES

This data set consists of black and white 8 x 10 in negatives of photomosaics, controlled by the 1:5 million Mariner 9 and Viking data, produced by the USGS at Flagstaff, Az. The images are mosaics of Viking 1 and Viking 2 Orbiter high-resolution pictures placed on an air-brushed background based on earlier data from Mars. The mosaics were created at 1:1.25 million and scaled to 1:75 million. Each mosaic covers the areal surface for the Mars subquadrangle maps. The legend on the mosaics includes the Mars subquadrangle map number and the center coordinates in deg of longitude and latitude. Longitude and latitude lines at 5 deg intervals are shown where the base image is not covered by the Viking mosaics. Mosaic coverage of the subquadrangle areas varies depending on available images at the time of creation of the mosaics. Footprint sketches showing the Viking picture numbers accompany the mosaics. These picture numbers can be used in ordering individual frames making up the mosaics.

Data set name - SEDR QUADRANT AND SUBQUADRANT PLOTS ON MICROFICHE

NSSDC ID 75-075A-01T, SEDR QUAD/SUBQUAD PLOTS

Time period covered - (N/A)

Quantity of data - 73 CARDS OF B/W MICROFICHE

These data, in microfiche supplied by the investigation team, contain a complete listing of all images which make up the USGS mosaics. In addition the image numbers are displayed in the positions where the images are in the mosaic. The mosaic number, spacecraft and date of photo coverage are given at the bottom of each plot. The image resolution is also displayed at the bottom of the plot.

Data set name - MARS IN 3D, MOVIEFILM

NSSDC ID 75-075A-01U, MARS IN 3D,MOVIEFILM

Time period covered - (N/A)

Quantity of data - 900 COLOR NEGATIVES

This movie, on 16mm film, uses an anaglyph technique for stereo separation (the left eye and right eye film are printed through filters onto a single reel to give superimposed red and green images). It must be viewed with glasses that have red and green filters to allow each eye to see the correct image. The image is in black and white for the scenes which were black and white in the original material, and false color in the remaining scenes. The movie combines techniques of computer image processing, animation, and stereo movie technology. It includes some stereo scenes acquired by the Viking Orbiter cameras, shots taken at the Jet Propulsion Laboratory showing the operation of the Viking Lander spacecraft, and surface of Mars as viewed in three dimensions, at both Lander sites, by the Viking Lander cameras system. The running time for this movie is 23 minutes. A stereo sound track version of this movie that requires two projectors was made for special showings by JPL. That version is not available from NSSDC.

Data set name - BLACK AND WHITE PHOTOMOSAICS 1:500,000 (*)

NSSDC ID 75-075A-01V, B/W PHOTOMOSAICS 1:500 K

Time period covered - (N/A)

Quantity of data - 97 B/W NEGATIVE FRAMES

This data set consists of high resolution (1:500K) photomosaics which exist as 8 x 10-in first generation B/W negatives. They cover the equatorial region between 65 and 75 degrees longitude, and include the east central and central parts of Valles Marineris. They were produced from Viking 1 Orbiter imagery by the U.S. Geological Survey (Flagstaff, Arizona). Footprint sketches showing the Viking picture numbers and the latitude and longitude of the corners accompany the mosaics. Each photomosaic covers an area that is 5 degrees on a side.

Data set name - USGS PHOTOMOSAICS 1:2M (*)

NSSDC ID 75-075A-01W, USGS PHOTOMOSAICS 1:2M

Time period covered - (N/A)

Quantity of data - 88 B/W NEGATIVE FRAMES

This data set contains 8 X 10 negatives. The scale used is 1 to 2000. The negatives are made up from imagery from both Viking 1 and 2 Orbiters. Footprint maps accompany the data.

Data set name - IMAGING DATA ON MAGNETIC TAPE (*)

NSSDC ID 75-075A-01X, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 06/18/76 TO 08/15/80
(As verified by NSSDC)

Quantity of data - 367 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 55000 images obtained by the Viking 1 Orbiter TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 53 blocks containing 32000 bytes per block. Each block is composed of 20 logical records of 1600 bytes each. The first two logical records of the first block contain a label. The label is followed by 1056 logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by Picno., an image sequence number, against tape/file position. For this reason, it is necessary to be able to identify the Picnos. of interest before placing an order.

VIKING 1 ORBITER, FARMER
MARS ATMOSPHERIC WATER DETECTION (MAWD)

Data set name - ATMOSPHERIC WATER RADIANCE/GEOMETRY DATA ON TAPE

NSSDC ID 75-075A-03A, ATMOSPHERIC WATER DATA ON TAPE

Time period covered - 06/18/76 TO 06/15/80
(As verified by NSSDC)

Quantity of data - 68 REELS OF TAPE

These data are contained on 9-track, binary, 800-bpi magnetic tape supplied by the investigation team. They contain the decalibrated values of the infrared radiance from each observation and a variety of geometrical parameters that define the area viewed, and include pertinent observational parameters. Each tape record contains all the data from one complete raster (15 consecutive measurements), including the radiances and the area of the surface viewed, followed by average values for the whole raster as well as pertinent geometrical and timing information.

VIKING 1 ORBITER, KIEFFER
INFRARED THERMAL MAPPING (IRTM)

Data set name - DECALIBRATED INFRARED THERMAL MAPPING DATA ON MAGNETIC TAPE

NSSDC ID 75-075A-02A, DECALIBRATED IRTM DATA ON MAGTAPE

Time period covered - 06/22/76 TO 02/23/79
(As verified by NSSDC)

Quantity of data - 36 REELS OF TAPE

These data are contained on 9-track, binary, 800-bpi magnetic tape supplied by the investigation team. They contain the decalibrated values of brightness for every observation and a variety of geometrical parameters to define the area viewed and the pertinent observational parameters. Included are header records specifying the geometry of the orbit and of the spacecraft at the time of the observational sequence, and data records giving the brightness data and the geometric parameters pertaining to each measurement.

VIKING 1 ORBITER, MICHAEL, JR.
ORBITER RADIO SCIENCE

Data set name - SURFACE ELECTRICAL PROPERTY DATA PLOTS ON MICROFILM

NSSDC ID 75-075A-04A, 381 MHZ RELAY LINK

Time period covered - 07/21/76 TO 10/04/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are on 16-mm microfilm generated by NSSDC from paper plots supplied by the Radio Science Team. The plots show amplitude vs time of Lander telemetry signals received by the Orbiters. This data set includes Orbiter 2 and Lander 1 and 2 data. There are three sections to the data: multipath residual data from Lander 1 to Orbiter 1, gain and axial ratio data from Lander 2 to Orbiter 2, and gain and axial ratio data from Lander 2 to Orbiter 1.

Data set name - RADIO OCCULTATION OBSERVATIONS ON MAGNETIC TAPE

NSSDC ID 75-075A-04B, RADIO OCCULTATION DATA TAPES

Time period covered - 10/06/76 TO 11/01/76
(As verified by NSSDC)

Quantity of data - 7 REELS OF TAPE

These data, supplied by the Radio Science Team, are contained on 7-track, 800-bpi, BCD magnetic tapes. In one occultation observation several hundred to several thousand measurements of Doppler frequency were made using either the S-band or X-band frequencies, or both. For each measurement

there is trajectory information and frequency information. On the tapes, trajectory files giving the position and velocity of the Orbiter and earth relative to Mars alternate with data files giving the measured Doppler frequency or frequencies at corresponding times.

Data set name - ORBITER RADIO SCIENCE TRACKING DATA ON MAGNETIC TAPE

NSSDC ID 75-075A-04D, ORBITER TRACKING DATA ON MAG TAPE

Time period covered - (N/A)

These 7-track, 800-bpi magnetic tapes, supplied by the Radio Science Team, are merged and reformatted versions of the original project tracking tapes. Each record contains all or a subset of the following parameters: time, S-band Doppler frequency, X-band Doppler frequency, S-band range and X-band range (light time in nanoseconds), and certain tracking station information. Spacing between Doppler points is 1 min or less and between ranging points is from 5 to 20 min. For analysis of the Doppler and range tracking data from the Orbiters, two types of additional data are required: (1) Orbiter state vectors -- these are tabulations (usually daily) of the position and velocity vectors of the spacecraft in various coordinate systems, and (2) calendar of Orbiter maneuvers -- these are chronological listings of the times of Orbiter maneuvers. Propulsive maneuvers changed the spacecraft orbit discontinuously. Nonpropulsive maneuvers, which merely reoriented the orbiter, are nevertheless clearly visible in the Doppler data. These two additional types of supporting data are included as part of this data set.

Data set name - DECALIBRATED RANGE DATA ON MAGNETIC TAPE

NSSDC ID 75-075A-04E, DECALIBRATED RANGE DATA TAPES

Time period covered - (N/A)

These data, supplied by the Radio Science Team, are on 7-track, 800-bpi magnetic tapes. For the 'good' range points, which are a subset of the range points on the tracking data tapes (see 75-075A-04D), the results of an extensive calibration program are presented. The parameters listed are time, uncorrected range in nanoseconds, correction for time delay in the spacecraft transponder, correction for time delay in the tracking station equipment, correction for the interplanetary plasma effect (from comparison of S- and X-band data), and final corrected range. The latter should be the best obtainable value of the range between the tracking station antenna and the spacecraft antenna.

********** VIKING 2 LANDER **********

Data set name - BIBLIOGRAPHY OF THE VIKING MARS SCIENCES

NSSDC ID 75-083C-00D, BIBLIOGRAPHY OF VIKING MARS SCI

Time period covered - (N/A)

Quantity of data - 10 CARDS OF B/W MICROFICHE

This is the first edition, published May 18, 1978, of a bibliography of the scientific results of the Viking missions, the two Landers and the two Orbiters. It attempts to include every publication in a scientific journal of the experimental results, or theoretical interpretation of the Viking data, descriptions of the scientific instruments that might be of value to scientists utilizing these data and a few general papers or books summarizing the results or describing the mission operations and history. This bibliography does not include abstracts or presentations at scientific meetings, accounts in newspapers and popular magazines, and scientific discussions of Mars that are not directly related to the information acquired by the Viking spacecraft.

VIKING 2 LANDER, ANDERSON
SEISMOLOGY

Data set name - SEISMIC DATA RECORD FORMAT PROGRAM ON MAGNETIC TAPE

NSSDC ID 75-083C-08A, SEISMIC DATA PROGRAM TAPE

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the investigation team, consist of a 7-track, 800-bpi, even parity, BCD magnetic tape program that is used to read the EDR tapes described in data set 75-083C-08B. This program (EDRFMT) was written to remove the control words and to write the output as card images, one record to an image. This was necessary because the EDR tapes were written in BCD by a Fortran program on a Univac 1108. When data are written by a Fortran program on that machine, only one record format is permissible, and the control words are in binary, not BCD, which complicates the task of reading the EDR tapes.

Data set name - SEISMIC DATA RECORDS ON MAGNETIC TAPE

NSSDC ID 75-083C-08B, SEISMIC EDR-2 TAPES

Time period covered - 09/03/76 TO 03/29/78
(As verified by NSSDC)

Quantity of data - 113 REELS OF TAPE

These data, supplied by the investigation team, consist of 7-track, 800-bpi, even parity, BCD magnetic tapes created on a Univac 1108 computer. The records are arranged in buffers, which are the basic units of seismometer data. Each buffer has two header records containing information such as timing, the number of data samples in the buffer, and the operating status of the instrument. Following the header records are the data samples. Each data sample consists of one sample from each of the three individual seismometers. If a sample is not available from a component, zeros are written. At least one data sample is written for each measurement period.

Data set name - SEISMOGRAM RECORDS FOR SOL 1-8 ON MICROFILM

NSSDC ID 75-083C-08C, SEISMOGRAM RECORDS SOL 1-8 MICROFILM

Time period covered - 09/04/76 TO 09/11/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data consist of plots generated from the data on the EDR magnetic tapes (75-083C-08B) for the first eight Martian days (sols) of operation. The plots show time vs voltage. The plots are for the three seismometers with each being plotted to show amplitude and zero crossings vs time. Additional information such as filter, mode, and both UT and local Mars time, are included with each plot. These experimenter-generated plots are all that are expected in this data form.

VIKING 2 LANDER, ARVIDSON
LANDER IMAGING

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-083C-06A, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 09/09/75 TO 02/22/77
(Date supplied by experimenter)

Quantity of data - 12 B/W POSITIVE FRAMES

These data are on 4- x 5-in. B/W negatives released by the Project for public distribution. These photographs are of selected scenes near the Lander that are of general interest to the public. A description of each photograph is included.

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-083C-06B, PRESS-RELEASE COLOR PHOTOS

Time period covered - 11/26/76 TO 01/17/77
(Date supplied by experimenter)

Quantity of data - 5 COLOR POSITIVE FRAMES

These data are on 4- x 5-in. color film released by the Project for public distribution. These photographs are of selected scenes near the Lander that are of general interest to the public. A description of each photograph is included. The coloring cannot be considered to be accurate because of color inaccuracies in reproduction.

Data set name - TEAM DATA RECORD (TDR) B/W IMAGES ON FILM

NSSDC ID 75-083C-06C, TDR LANDER IMAGING PRODUCTS 5X12

Time period covered - 09/03/76 TO 06/07/77
(As verified by NSSDC)

Quantity of data - 879 B/W NEGATIVE FRAMES

These data, supplied by the Lander Imaging Team, are on 5- x 12-in. B/W film. TDR data consist of those camera events (CE's) from the EDR thought to be of most general interest. It excludes such things as specialized photometric series, calibration and scan verification events, and solar images. The processing parameters for the camera events in the TDR were chosen to create photographic products of the highest scientific quality. Each frame is divided into segments, with the data block appearing on the last segment of the camera event. The TDR and EDR CE labels are identical. The TDR version will be supplied for requests unless EDR is specified. The TDR-IPL prime mission catalog (75-083C-06K) should be used to order TDR images.

Data set name - EXPERIMENT DATA RECORD BLACK AND WHITE PHOTOGRAPHY

NSSDC ID 75-083C-06D, EDR BLACK AND WHITE PHOTOGRAPHY

Time period covered - 09/03/76 TO 11/05/76
(As verified by NSSDC)

Quantity of data - 1138 B/W NEGATIVES

This data set, supplied by the Lander Imaging Team, consists of the B/W EDR version of the Lander photography. The data block on each frame contains identification, processing, and camera event information. The data are available on 5-in. roll film or as individual 5- x 5-in. frames and may be ordered with or without the data block. This total data set is a complete record of the Lander imaging data as received on earth. The picture catalog of primary mission EDR (75-083C-06E) should be used to order EDR images.

Data set name - PICTURE CATALOG OF PRIMARY MISSION EXPERIMENT DATA RECORD (EDR)

NSSDC ID 75-083C-06E, PICTURE CAT OF PRIME MISSION EDR

Time period covered - (N/A)

Quantity of data - 6 CARDS OF B/W MICROFICHE

These data are on B/W microfiche generated at NSSDC from NASA Reference Publication 1007 prepared by Robert B. Tucker. This publication is a general reference for the imaging data from the Viking Lander primary mission. It presents the results of the procedures that were applied to the imaging data to produce an organized record that is as complete and as error-free as possible. The result is called the experiment data record. This publication contains all images returned by the two Viking Landers during the primary mission. Skyline drawings display the outlines of the images as they appear in the viewing area. Also included are a selection of computer-generated camera event reports that list supplemental information about the conditions under which the data were collected and how they were processed and recorded. In addition to a comprehensive report, several listings are included that group the images in a variety of ways (e.g., by time of day). A section on terminology has been included to assist with the interpretation of the listings and the image presentation. Several diagrams also provide assistance on this subject. This publication will acquaint the user with the imaging data that are available from the Viking Lander primary mission and the procedure used to obtain photographic products. It is necessary to order this data set to select EDR images (75-083C-06D).

Data set name - TEAM DATA RECORD (TDR) COLOR IMAGES ON FILM

NSSDC ID 75-083C-06F, TDR COLOR IMAGES 5X12-INCH

Time period covered - 09/05/76 TO 11/05/76
(As verified by NSSDC)

Quantity of data - 336 COLOR NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of 5- x 12-in. color images selected from the TDR images. There are generally two versions of each scene. The two versions represent the colors as seen on Mars under Mars lighting conditions and as seen on earth under earth lighting conditions. Included on each frame are gray scale wedges, data blocks, and color spectrum histograms. Occasionally, a third type is given in which the color is as on Mars but was made from products that did not have the full six-channel data acquired. This type is called "radcam". The TDR-IPL prime mission catalog (75-083C-06K) should be used to order TDR images. The coloring cannot be considered to be accurate because of color inaccuracies in reproduction.

Data set name - HIGH-RESOLUTION B/W MOSAICS

NSSDC ID 75-083C-06H, LANDER HI-RES MOSAICS

Time period covered - (N/A)

Quantity of data - 24 B/W NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of computer-generated high-resolution mosaics on 8- x 10-in. B/W negatives. Three sets of mosaics were produced: one set for images acquired early in the morning, one set for images acquired around noon, and one set for images acquired in the early evening. The complete mosaicked scene extends 342.5 deg in azimuth. The image area extends from approximately 5 deg above the horizon to 60 deg below. The mosaic negatives have been made in two forms. In one case, using a 25-micrometer spot size, the complete four quadrants of a single mosaic are contained on a single 8- x 10-in. negative. In the second case, three products are made using a 100-micrometer spot size. They cover quadrants 1 and 2, 2 and 3, and 3 and 4 on each of three 8- x 10-in. negatives. The quadrant azimuth limits are as follows: quadrant 1 is 0 to 90 deg, quadrant 2 is 84 to 174 deg, quadrant 3 is 168 to 258 deg, and quadrant 4 is 252 to 342 deg.

Data set name - HIGH RESOLUTION BLACK AND WHITE DONUT PROJECTION MOSAICS

NSSDC ID 75-083C-06I, LANDER DONUT PROJECTION IMAGE

Time period covered - 09/21/76 TO 10/07/76
(As verified by NSSDC)

Quantity of data - 6 B/W NEGATIVE FRAMES

This data set, supplied by the Lander Imaging Team, consists of 8- x 10-in. B/W negatives of computer-generated panoramas produced to show a 360-deg fisheye-type image of the Martian terrain with the camera in the center of the image. This produces a "hole" where the cameras could not scan and hence the name "donut". They are useful primarily for showing the locations of features relative to the Landers. Each donut image was created using a high-resolution mosaic from data set 75-083C-06H. These mosaics were sub-sampled by a factor of three, reducing the resolution, to conserve computer processing time. The donut images were generated for the same time periods as the mosaics.

Data set name - MULTIPLE CE-LABEL (BLUE-GREEN-RED) LANDER PHOTOGRAPHY ON 5X12-INCH FILM

NSSDC ID 75-083C-06J, MULTI-CE-LABEL LANDER PHOTOS

Time period covered - 06/02/77 TO 06/02/77
(As verified by NSSDC)

Quantity of data - 7 COLOR NEGATIVE FRAMES

This data set consists of 5- x 12-in. color images prepared by combining the output from two or three diodes (usually red, green, and blue). The images were acquired during the extended mission and supplied by the Lander Imaging Team. The coloring cannot be considered to be accurate because of color inaccuracies in reproduction and aging of the images. No catalog of these photos exists at NSSDC.

Data set name - TDR-IPL PRIME MISSION CATALOG ON MICROFICHE

NSSDC ID 75-083C-06K, TDR-IPL PRIME MISSION CATALOG

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set, supplied by the Lander Imaging Team, is on B/W microfiche. The necessary ordering information is camera event (CE) label, version, segment, and IPL pic id. Engineering parameters are also included. An asterisk with the CE label indicates the availability of a color image. It is necessary to order this data set to select TDR images (75-083C-06C and -06F).

Data set name - CATALOG OF PRIMARY MISSION TDR COLOR IMAGES

NSSDC ID 75-083C-06L, CATALOG OF PRIMARY TDR COL IMAGES

Time period covered - (N/A)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of a catalog printout, which was filmed by NSSDC, of all primary mission TDR color images. The necessary ordering information is camera event (CE) label, version, segment, IPL pic ID. Engineering parameters are also included. It is necessary to order this data set to select color TDR images (75-075C-06F) and (75-083C-06F).

Data set name - HIGH-RESOLUTION MOSAIC INDEX AND MOSAICKING DESCRIPTION

NSSDC ID 75-083C-06M, HI-RES MOSAIC INDEX + DESCRIPTION

Time period covered - 10/08/77 TO 10/23/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set, filmed by NSSDC, from experimenter supplied hardcopy, consists of all the available Lander high resolution mosaics, a mosaicking description, and an index on 16-mm microfilm. The intended purpose of this data set is to aid in selecting individual photographs.

Data set name - PRIME, EXTENDED, AND CONTINUATION PICTURE CATALOG ON MICROFICHE

NSSDC ID 75-083C-06N, PRIME, EXT, CONT MISSION PIC CAT

Time period covered - (N/A)

Quantity of data - 57 CARDS OF B/W MICROFICHE

These data, on black and white microfiche, supplied by the investigation team, are in COSATI format with 60 images per card. The top of each card contains the microfiche card number and a frame delineating the CE label numbers contained on that card. The images are actual duplications of the Lander photos. The data block for each image contains information as to the spacecraft name, camera, CE label number, azimuthal elevation angles, sun azimuth and elevation. The IPL pic ID is also given in this data block.

Data set name - EXPERIMENT DATA RECORD DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-06O, EDR IMAGE DATA ON TAPE

Time period covered - 09/02/76 TO 05/16/78
(As verified by NSSDC)

Quantity of data - 87 REELS OF TAPE

These experimenter-supplied, experiment data record image data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters- satellite identification, camera number, diode, step size, channel/mode, azimuth, elevation, offset, gain, scan rate, data rate, data path, total lines, rescan begin and total, sun azimuth and elevation, anti-solar azimuth and elevation, event day and time of day, standard deviation; number of missing lines and gaps, percentage of missing data and source tape, and file number.

Data set name - HIGH RESOLUTION MOSAIC

NSSDC ID 75-083C-06P, HIGH RESOLUTION MOSAIC

Time period covered - (N/A)

Quantity of data - 24 REELS OF TAPE

The experimenter-supplied, high-resolution mosaic data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters - satellite identification; camera number; diode; step size; channel/mode; azimuth; elevation; offset; gain; scan rate; data rate; data path; total lines; rescan begin and total; sun azimuth and elevation; anti-solar azimuth and elevation; event day and time of day; standard deviation; number of missing lines and gaps; percentage of missing data and source tape and file number.

Data set name - STEREO HIGH RESOLUTION

NSSDC ID 75-083C-06Q, STEREO HIGH RESOLUTION

Time period covered - (N/A)

Quantity of data - 12 REELS OF TAPE

These experimenter-supplied, stereo high-resolution data are on 9-track, 800-bpi, EBCDIC magnetic tape created on an IBM 360 computer. The data are picture images with each horizontal line of picture elements (pixels) represented as one logical record. Each image file on tape consists of a series of label records followed by 512 records of pixel information. The label records contain parameter information for the associated image. The length, in characters, of the physical label records is equal to the number of pixels in a horizontal image line or 360, whichever is greater. The label record contains the following parameters - satellite identification; camera number; diode; step size; channel/mode; azimuth; elevation; offset; gain; scan rate; data rate; data path; total lines; rescan begin and total; sun azimuth and elevation; anti-solar azimuth and elevation; event day and time of day; standard deviation; number of missing lines and gaps; percentage of missing data and source tape and file number.

Data set name - STEREO MOSAICS

NSSDC ID 75-083C-06R, STEREO MOSAICS

Time period covered - (N/A)

Quantity of data - 34 B/W NEGATIVE FRAMES

These negatives, provided by the experimenter, contain both standard vistereo and special vistereo. The special vistereo emphasizes or enhances certain topographic characteristics of the scene. Each negative is labeled either standard or special and contains information on the high-resolution mosaic it was produced from. It identifies whether the image is from the front or back of the Lander, and tells which eye, right or left, should view the image. The Image Processing Laboratory picture identifier (IPL pic id) is expressed as the date of the processing of the image on the computer (yy/mm/dd/hhmmss).

Data set name - TOPOGRAPHIC MAP ATLAS OF LANDING SITE

NSSDC ID 75-083C-06T, TOPO MAP ATLAS-LANDING SITE

Time period covered - (N/A)

Quantity of data - 1 BOOK OR BOUND VOLUME

This data set consists of two kinds of topographic map products generated from the stereo pictures : (1) elevation contours and (2) vertical profiles. The maps of the Viking 2 Lander site are in Part III. Also included are descriptions of the mapping techniques and indices. These maps cover the area from the immediate foreground of the Lander to 500 m out in both the front and back of the Lander. The ranging accuracy decreases approximately quadratically, with plus or minus 1-cm accuracy near the Lander to plus or minus 20 m at 100-m range. The maps were produced at scales ranging from 1:1 to 1:2000 and then reduced to half-size for incorporation in the book format.

Data set name - HIGH RESOLUTION LITHOGRAPHIC MOSAICS

NSSDC ID 75-083C-06W, HIGH RESOLUTION LITHO MOSAICS

Time period covered - (N/A)

These mosaic lithographs are available through the US Geological Survey. For each of these mosaics there is a set of five sheets consisting of four single sheets for each sector, and a fifth sheet with the complete mosaic, with an image 9 inches high and 38 inches long. The one-sector sheets, each with an image 24 inches high by 30 inches long assembled together make a mosaic two feet high by 10 feet wide. The lithographs were made by standard procedures using a screen of 130 lines/inch. Each single sector lithograph product has two sets of fiducial scales bordering the image. One gives the azimuth angle from Mars north and the elevation angle relative to the nominal horizon. The second set gives the IPL line and sample number. The sector 1 sheet and sector 2 sheet cover

lines 170 to 2290 and 2200 to 4320 respectively from the sector 1 and 2 800 bpi digital tape. The sector 3 sheet and sector 4 sheet lines cover lines 40 to 2160 and 2070 to 4190 respectively from the sector 3 and 4 800 bpi tape. There are approximately 90 lines of overlap of the scene between adjacent sector images. The fifth sheet for each mosaic has two 8-inch high by 38-inch long images of the completed mosaicked scene. One is bordered by IPL line and sample numbers that reference the four-sector 1600 bpi digital tape for that mosaic. The second serves the same purpose as the reduced image in the single sector sheets, giving the relationship between rectified camera control coordinates and azimuth angles from Mars north. It also identifies the distance and size of rocks in the scene. These sheets have two other images of interest. One is a 7-inch diameter image of a polar stereographic projection of the mosaic. This is the "donut" projection. The second is an image acquired by the Viking orbiter cameras showing the location of the Viking Lander.

Data set name - IMAGING DATA ON MAGNETIC TAPE.
(*)

NSSDC ID 75-083C-06X, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 09/03/76 TO 02/01/80
(As verified by NSSDC)

Quantity of data - 31 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 4600 images obtained by the Viking 2 Lander TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 515 or more blocks, containing a variable number of bytes per block. The number of bytes per block is equal to the number of scan lines taken by the camera or 360, whichever is larger. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by Picno., an image sequence number, against tape/file position. For this reason, it is necessary to be able to identify the Picnos. of interest before placing an order.

VIKING 2 LANDER, BIEMANN
MOLECULAR ANALYSIS

Data set name - GAS CHROMATOGRAPH MASS SPECTROMETER SOIL ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-04A, GCMS SOIL ANALYSIS FLIGHT DATA

Time period covered - (N/A)

Quantity of data - 2 REELS OF TAPE

These data, on 9-track, 800-bpi, unlabeled, IBM-compatible tapes, are in raw form, just as they were received by the Viking experimenters from the telemetry decommutation program output, except that they have been put into logical order and gaps have been filled in. They are unlikely to be usable by anyone not very familiar with the mission operations and the instrument design. Each sample run, comprising one file on the tape, includes several spectral scans divided arbitrarily into small blocks. The quantities listed are the output of the analog-to-digital converter on a logarithmic scale as a function of time. Separate blocks of engineering data contain temperatures, pressures, and other instrument parameters.

Data set name - SOIL ANALYSIS MASS SPECTRA ON MAGNETIC TAPE

NSSDC ID 75-083C-04B, SOIL ANALYSIS MASS SPECTRA

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

The spectral data, on 9-track, 800-bpi tapes, are reduced versions of the GCMS soil analysis data (75-083C-04A). Each sample run is on a separate file, and there is one record for each spectral scan, including mass spectrum data and engineering data. Listed is the intensity in arbitrary linear units as a function of mass number from 12 to 215 in the conventional mass spectrum format. The engineering information included permits conversion of intensities to current units.

Data set name - SOIL ANALYSIS MASS SPECTRA ON MICROFILM

NSSDC ID 75-083C-04C, SOIL ANAL CONSECUTIVE MASS SPECTR

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

The same data as on the mass spectra tapes are presented as bar graphs on 16-mm microfilm. Each frame contains one complete graph of the intensities of all masses detected. Because the lower masses (mostly CO2 and H2O) are predominant, a second graph starting at about mass 45 shows the heavy elements at a more appropriate scale. Graphs of engineering parameters are also included.

Data set name - GCMS ATMOSPHERIC ANALYSIS DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-04D, GCMS ATMOSPHERE FLIGHT DATA

Time period covered - (N/A)

These data, on 9-track, 800-bpi tape, are the GCMS raw data for the atmospheric analyses. For the Viking 1 primary mission there were 4 filtered atmospheric samples with CO and CO2 removed, 17 unfiltered samples, and 3 samples after 10 enrichment cycles to increase the concentration of trace elements. For the Viking 2 primary mission there were 4 filtered atmospheric samples with CO and CO2 removed, 2 unfiltered samples, 1 sample after 5 enrichment cycles, 2 samples after 10 enrichment cycles, and 6 samples after 15 enrichment cycles. These tapes contain data in raw form similar to that on the soil analysis flight data tapes, but the data quantity is much less. The parameters are mass spectrometer electron multiplier output as a function of time for each measurement scan and the associated background scan.

VIKING 2 LANDER, HARGRAVES
MAGNETIC PROPERTIES

Data set name - INDEX OF MAGNET IMAGES ON MICROFICHE

NSSDC ID 75-083C-10A, INDEX OF MAGNET IMAGES ON M/FICHE

Time period covered - 09/03/76 TO 10/31/76
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

These data are on B/W microfiche generated at NSSDC from a hardcopy index supplied by the investigator. This index lists the Lander camera images taken of the magnet pairs mounted on the sampler arm and the lander body. The listing contains the Martian day (sol); image reference number by CE label; resolution; if color, black and white, or infrared; if in the sun or shaded; and comments.

Data set name - MAGNET IMAGES ON ROLL FILM

NSSDC ID 75-083C-10B, MAGNET IMAGES ON ROLL FILM

Time period covered - 09/03/76 TO 10/31/76
(As verified by NSSDC)

Quantity of data - 47 B/W POSITIVE FRAMES

These data are on 5-in. B/W roll film generated at NSSDC from Lander camera images supplied by the Lander Imaging Team. These data are the best images of the magnet pairs taken by the Lander camera. They are also available as individual B/W frames.

VIKING 2 LANDER, KLEIN
BIOLOGY

Data set name - GAS EXCHANGE, LABELED RELEASE, AND PYROLYTIC RELEASE DATA ON MICROFILM

NSSDC ID 75-083C-03F, GEX, LR, AND PR MEASUREMENTS

Time period covered - 09/04/76 TO 05/29/77
(As verified by NSSDC)

Quantity of data - 11 REELS OF MICROFILM

These data, supplied by the investigation team, are on 16-mm microfilm and consist of descriptions of the commands that were sent to operate the three instruments, and tabulations of raw and reduced data returned. The command data include: Mars time for each experiment sequence, the commands sent, predicted data points for each command file that were

used to time tag the data when it came back from the instrument, and a summary of the major events of each command sequence. These command data are identified as BIOLOGY/C. The tabulation/plot data include instrument response, time-tagged, engineering, and summary plot data. The instrument response data consist of raw return downlink data in octal form, the same data after basic reduction, and the time-tagged data in value point form. The time-tagged data are the primary reduced form of the data. These data are Mars mission time (mmt) of the data point, local Lander time (llt), type of measurement, the value of the data point, and diagnostic information about each data point. Engineering data are included after the raw and reduced data. The fourth part of the data is plots that summarize the data. The reduced data for the biology instrument are gex chromatogram voltages, gex nanomoles vs time plots, pr radioactivity vs time, lr counts/min summary, and time-tagged instrument values.

VIKING 2 LANDER, MICHAEL, JR.
LANDER RADIO SCIENCE

Data set name - DOPPLER AND RANGE TRACKING DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-11B, RANGE + DOPPLER DATA

Time period covered - 09/05/76 TO 01/29/77
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set, supplied by the Radio Science Team, is contained on 7-track, 800-bpi tapes that are merged and reformatted versions of the original project tracking tapes, and have essentially the same format as the Orbiter tapes. Each record contains all, or a subset of, the following parameters: time, Doppler frequency, range (i.e., light time in nanoseconds), and certain tracking station information. Spacing between Doppler points is usually 10 s; between ranging points it is from 2 to 20 min. Each tape contains data from one spacecraft. A set of IBM cards listing the range hardware delay calibration data is included with these data. The calibrations are given for the combined effect of the signal delays caused by both a tracking station's equipment and the spacecraft transponder.

Data set name - DECALIBRATED LANDER RANGE DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-11C, DECALIBRATED RANGE DATA TAPES

Time period covered - (N/A)

This data set, supplied by the Radio Science Team, is contained on 7-track, 800-bpi tapes. For the 'good' range points, which are a subset of the range points on the tracking data tapes (75-083C-11B), the results of an extensive calibration program are presented. The parameters listed are time, uncorrected range in nanoseconds, correction for time delay in the Lander transponder, correction for time delay in the tracking station equipment, correction for the interplanetary plasma effect (from near-simultaneous Orbiter S- and X-band data), and final corrected range. The final corrected range should be the best obtainable value of the range between the tracking station antennas and the Lander.

VIKING 2 LANDER, NIER
ENTRY SCIENCE ATMOSPHERIC STRUCTURE

Data set name - ATMOSPHERE TEMPERATURE AND PRESSURE LISTINGS ON MICROFICHE

NSSDC ID 75-083C-02A, ATMOS TEMP + PRESS LSTNGS, MFICH

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set consists of tables and listings, filmed by NSSDC from data supplied by the experimenter, of atmospheric pressure and temperature measured during the Lander entry phase including the parachute descent. The tables give the time (seconds), atmospheric pressure (millibars), altitude (kilometers), vehicle velocity (meters/second) and the temperature (degrees Kelvin). The listings give the altitude measured by the radar altimeter, the axial acceleration, the normal acceleration in the plane of the lift vector, the relative velocity, the relative flight path angle, the relative heading angle, and the areocentric latitude and longitude.

VIKING 2 LANDER, NIER
ENTRY SCIENCE NEUTRAL ATMOSPHERIC COMPOSITION

Data set name - TIME-ORDERED MASS SPECTRA PLOTS ON MICROFILM

NSSDC ID 75-083C-12A, NEUT. ATMOS. MASS SPECTRA ON FILM

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy data plots supplied by the investigation team. These data include time-ordered mass spectra plots displayed on a semilog graph. The ordinate scale is ion current, and the linear abscissa scale is word number. Beneath the abscissa is printed spacecraft time (measured from the time of deorbit) and universal time. With the accompanying documentation, it is possible to convert current values to ambient particle number densities, word number to atomic mass, and time into altitude in kilometers.

Data set name - TIME-ORDERED ION CURRENT LISTINGS ON MICROFILM

NSSDC ID 75-083C-12B, TABLES OF M.S.CURRENTS ON FILM

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy tabulated data provided by the investigation team. These data consist of the time-ordered ion current listings from which the mass spectra plots were produced. The items tabulated include: word number, frame number, electrometer current readings, and gain step. At the end of the film are additional ion current data not in temporal order and miscellaneous housekeeping data. The accompanying documents permit the conversion of current to ambient particle number density, word number to atomic mass, and time to altitude in kilometers.

VIKING 2 LANDER, NIER
ENTRY SCIENCE IONOSPHERIC PROPERTIES

Data set name - TRAJECTORY AND ATTITUDE DATA ON TAPE

NSSDC ID 75-083C-14A, EXP.TRAJECT.-ATTITUDE DATA, TAPE

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the investigation team, are on 9-track, binary, 1600-bpi, unlabeled tape, and contain trajectory and attitude data for the Viking 1 and 2 Landers. There is one file for each spacecraft. Each record in a file contains the following parameters: time in seconds from deorbit; velocity in km/s; altitude above Mars' mean surface in kilometers; and flight angle, heading angle, sub-Lander latitude, sub-Lander longitude, RPA angle of attack, UAMS angle of attack, RPA sun angle, and zenith angle all measured in degrees.

Data set name - RPA ION AND ELECTRON DATA ON TAPE

NSSDC ID 75-083C-14B, RPA ION-ELECTRON DATA ON TAPE

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data, supplied by the investigation team, are on 9-track, 1600-bpi, binary tape. The data contain the complete record of the collected current vs retarding potential as a function of time for both Landers in both the electron and ion modes. There are four files on this tape, and each record contains time in seconds from deorbit, sequential frame number, major frame number, and pairs of retarding potential and collector current values.

Data set name - RPA ION AND ELECTRON DATA ON MICROFILM

NSSDC ID 75-083C-14C, RPA ION-ELECT. DATA ON 35MM FILM

Time period covered - 09/03/76 TO 09/03/76
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

These data, supplied by the investigation team, are on 16-mm microfilm. The data are essentially the same as the magnetic tape data set (75-083C-14B) and include current vs retarding potential plots for each individual sweep in the energetic electron mode; similar plots for thermal ions with the least-squares fit to the theoretical equation to determine concentrations, temperature, and other parameters; and time plots of altitude, velocity, and pertinent angles to define the instrument environment during the entry.

VIKING 2 LANDER, SHORTHILL
PHYSICAL PROPERTIES

Data set name - PUBLISHED REPORTS ON THE RESULTS OF THE PHYSICAL PROPERTIES EXPERIMENT

NSSDC ID 75-083C-01A, PHYSICAL PROPERTIES REPORTS

Time period covered - (N/A)

Quantity of data - 3 CARDS OF B/W MICROFICHE

This data set consists of reports published by the investigation team that discuss the results of the physical properties experiment. The reports discuss the hardware used, the results of tests using the systems test bed, the results of the imaging science tests, and the results of the science end-to-end tests. The approximate dates of the tests and the elements tested are also discussed. It is emphasized that the results are preliminary and, therefore, subject to change.

VIKING 2 LANDER, TILLMAN
METEOROLOGY

Data set name - SANMET LISTINGS OF TEMPERATURE AND VECTOR WIND VS TIME ON MICROFICHE

NSSDC ID 75-083C-07A, SANMET TEMP+VCTR WND VS TIME-LIST

Time period covered - 11/17/76 TO 02/11/78
(As verified by NSSDC)

Quantity of data - 1762 CARDS OF B/W MICROFICHE

This data set, on B/W microfiche consists of a copy of the computer printout of the science analysis of meteorology (SANMET) program, which presents all the information about every measurement that was available to the Viking Meteorology Science Team. Raw data (instrument voltage readings), reduced data, and statistical summaries are included. Much of the information is redundant or of no value to the user. For each Mars day there are four sets of data listings: (1) instrument voltage outputs (raw data); (2) calculated voltage, resistance, and temperature values; (3) wind and temperature data in geophysical units; and (4) pressure data in geophysical units. There is also information on the data base input that controlled the SANMET run and on parity errors in the data. The reduced data (items 3 and 4) were used to prepare the abridged data sets -07B and -07C.

Data set name - HIGH TIME RESOLUTION PLOTS OF VECTOR WIND AND TEMPERATURE VS TIME (SECONDS)

NSSDC ID 75-083C-07B, VECTOR WIND/TEMP VS TIME(SEC)PLTS

Time period covered - 09/03/76 TO 05/17/79
(As verified by NSSDC)

Quantity of data - 20 REELS OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy reduced data plots prepared by the experimenter. The data consist of plots of three parameters (wind speed, wind direction, and temperature) vs time (Mars seconds) elapsed since the beginning of the measurement. Such information as earth start and stop times of the observation is printed at the top of each frame. Normally there is one 5-min observing period for each Mars hour, except that the first observing period each day is for 10 min. Each plot displays relatively fine time scale data taken for one of the hourly observation periods.

Data set name - LOW TIME RESOLUTION (AVERAGE) PLOTS OF VECTOR WIND, AND TEMPERATURE VS TIME (HRS)

NSSDC ID 75-083C-07C, VECTOR WIND/TEMP VS TIME(HRS)PLTS

Time period covered - 09/03/76 TO 05/16/79
(As verified by NSSDC)

Quantity of data - 7 REELS OF MICROFILM

This 16-mm microfilm data set was generated at NSSDC from hardcopy analyzed data prepared by the experimenter from the reduced data in data set 75-083C-07B. The data consist of series of three film frames, one frame each for wind speed, wind direction, and temperature. Each plotted point is obtained by averaging all observations taken during one Mars hour (module). Each plot depicts daily parameter variations for a particular day.

Data set name - METEOROLOGY PRESSURE DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-07D, METEOROLOGY PRESSURE TAPE

Time period covered - 09/03/76 TO 11/04/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data were written on 7-track, 800-bpi, even-parity, BCD, unlabeled magnetic tape. The data were created on a Univac 1108 computer. Each physical record consists of 10 logical records of 20 characters. The data are contained on 61 files and consist of a sol header record and data records. Each header record contains a flag (always-9), Viking Lander no., sol, no. of groups in sol, no. of points rejected, and mean pressure of the sol (mb). Each data record consists of a flag (always+9), local time of record, no. of points comprising group (record), and mean pressure of the group (record). This format is the same for Viking 1 Lander meteorology pressure data (75-075C-07D).

Data set name - METEOROLOGY WIND TEMPERATURE DATA ON MAGNETIC TAPE

NSSDC ID 75-083C-07E, METEOROLOGY WNDTMP TAPE

Time period covered - 09/03/76 TO 11/04/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These data are written on 7-track, 800-bpi, even-parity, BCD, unlabeled magnetic tape. The data were created on a Univac 1108 computer. Each physical record is one logical record of 120 characters. The data are contained on 61 files with each file containing data for one sol. Each file consists of module header records followed by data records for the module. The header records contain the module no., start time, Lander epoch, sol no., data quality indicator, Lander no., and sample interval. The data records contain minimum, maximum, average and standard deviation values for wind speed, wind angle, thermocouple temp., reference sensor temp., plus sums of all flags, parity flags, and all missing values, average time and average platinum resistance temperature. This format is the same for Viking 1 Lander meteorology wind and temperature data (75-075C-07E).

Data set name - DAILY PLOTS OF WIND, TEMPERATURE, AND PRESSURE

NSSDC ID 75-083C-07F, DAILY PLOTS OF WNDTMP + PRESSURE

Time period covered - 07/20/76 TO 09/29/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data were filmed by the NSSDC from plots provided by the team leader. The plots consist of two consecutive sols plotted continuously. The upper left corner contains the Lander number and the sol day number. Immediately below this is the value of the areocentric longitude of the sun, in degrees at midnight of the indicated sol. The time scale is in hours of local Lander time. The times of sunrise, noon, and sunset are indicated by long tick marks on the upper border of the plot. The temperature plots are plotted at the mean time of each data record and connected by straight lines. The pressure data are taken from the pressure catalog produced at Florida State University (FSU). The pressure scale uses a nominal range of 10 mb which may shift up or down to fit the data. The pressure plots are connected by a dashed line. The winds plotted are derived from the wind and temperature catalog produced at FSU. The wind plots are in standard meteorological notation with a half arrow and barbs. North is at the top and West is at the left. On the bottom of the shaft each full barb represents 2 m/s. For larger winds the right scale of the shaft is used. Five full barbs on both right and left represents 60 m/s. For still stronger winds the value of all barbs is doubled and a stroke is placed across the tip of the half arrow to denote this doubling. Winds in excess of 120 m/s

are given as a half arrow with no barbs but a square at the tail of the arrow. A wind of less than 0.5 m/s is considered calm and represented by a circle around the time of data.

Data set name - PRINTED PRESSURE AND WIND,TEMPERATURE CATALOG

NSSDC ID 75-083C-07G, PRINTED PRESS + WNDTMP CATALOG

Time period covered - 09/04/76 TO 11/05/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data, filmed by NSSDC from hardcopy supplied by the team leader, consist of the meteorology pressure catalog and the meteorology wind and temperature (WNDTMP) catalog. The pressure catalog has one page for each sol per Lander. The pages are numbered begining with 0 for each Lander. There is a header, on each page, which contains: (1) the Lander number, (2) sol number, (3) number of groups in the sol, (4) number of points repeated, (5) page number and (6) the mean pressure for the sol. Items 3 and 4 are more fully explained in the documentation section, preceding the catalog data, on the microfilm. The WNDTMP catalog also has headers for each page of data. The headers consist of (1) page and sol number with (a) the header number, (b) the sol number, (c) the data of SANMET computer run, (d) the SANMET program used; (2) module headers with (a) the module number, (b) the time of start of module in UT, (c) the sample interval in seconds, and (d) a data quality indicator; (3) column labels with (a) rec-record number within the module, (b) hours - the mean lst of the record in hours, (c) speed sigma max min- for columns referring to wind speed, (d) angle sigma max- for columns referring to wind direction, (e) amb t sigma max min-four columns referring to ambient temperatures, (f) ref t sigma max min-four columns referring to temperature measured by the wind reference sensor, (g) plat- the mean for the record of the values from the platinum resistance thermometer, (h) b- information on a certain class of parity errors detected by SANMET, (i) f-information on whether SANMET rejected one or more measurement points, (j) m- the number of missing samples in a record and, (k) i- an indication of the possible unrepresentativeness of the data because of flow from the Lander body towards the meteorological sensors. A more complete explanation of these headings can be found in the documentation of Viking meteorology WNDTMP catalog which precedes these data on the microfiche reel.

Data set name - WIND AND TEMPERATURE CATALOG ON MAGNETIC TAPE

NSSDC ID 75-083C-07H, WIND AND TEMPERATURE CATALOG

Time period covered - 09/04/76 TO 12/05/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter supplied, wind and temperature catalog data are on 9-track, 1600 bpi, ASCII magnetic tape created on a Univac 1108 computer. The data are means and other statistics for each record of observation (sol), consisting usually of 16 samples. The records are blocked with thirty, 120 character fixed length lines each. Two types of lines are contained on each file: module header lines followed by data lines for the module. Each header line contains module no.; start time for the module in year, day of year, hour and minute; start time in local Martian lander time; data quality indicator; start time in s, and time in s between samples. Each data line contains the record no. within a module; highest and lowest wind speeds; the amount (in deci-degrees) by which the wind direction departs from the vector mean direction; the amount by which the max./min. temp. is above/below the mean thermocouple temp. and reference sensor temp.; no. of missing samples in the record; mean local Lander time in hr; vector mean wind speed and arithmetic standard deviation of wind speeds in meters per s; vector mean wind direction in deg; standard deviation of wind direction from the vector mean wind direction; arithmetic mean thermocouple temp. and reference sensor temp. and standard deviation of those temps. in deg K; and the mean for the record of the values from the platinum resistance thermometer in the boom housing.

Data set name - SOLAR AVERAGE PRESSURE DATA, PLOTS AND LISTINGS (*)

NSSDC ID 75-083C-07I, SOL AVG PRESS,PLOTS & LISTING

Time period covered - (N/A)

Quantity of data - 3 CARDS OF B/W MICROFICHE

This data set consists of two types of plots of Martian daily average pressure data. The mean pressure data (in millibars), retrieved from the sol average pressure tape (NSSDC 75-083C-07J), are derived from individual measurements that are sampled at intervals of 30 to 90 min. They are time-weighted daily average pressure with certain assumptions regarding gaps of longer than 3 h. Depending on the location of the gaps and their length, missing data are either filled in by interpolation or by extrapolation, or are excluded from the time-weighted statistics. The first type of plot has data presented in 670-sol blocks. The lower panel has the sol average pressure values plotted against time (in sols, normalized to local midnight). The upper panel illustrates the maximum time gap (in hours) in the same time period as that of the lower panel. The second type of plot has data presented in 100-sol blocks. The lower panel has the daily average pressure values from both Viking Lander 1 and Viking Lander 2 plotted against time. The upper level panel illustrates the standard deviations for both Lander 1 and Lander 2. The standard deviations provide crude indications of synoptic activity at both Lander 1 and Lander 2, and of dust-generated tides at Lander 1. Where time gaps are longer than 6 h, data are excluded from both types of plots. Altogether there are 2245 sols of data plotted for Lander 1 and 1050 sols of data for Lander 2. Notice that on the plots Lander 2 data begin on sol 44 because of its delay in landing relative to Lander 1. For more information, refer to the "Atmospheric Pressure Statistics From the Surface of Mars: the Viking Meteorology Experiment," by J. E. Tillman, available at NSSDC on the data tape that is mentioned above.

Data set name - SOLAR AVERAGE PRESSURE DATA ON MAGNETIC TAPE (*)

NSSDC ID 75-083C-07J, SOL AVERAGE PRESSURE TAPE

Time period covered - 09/04/76 TO 07/21/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This experimenter-supplied data set consists of Martian daily average pressure data written on a 9-track, 1600-bpi, ASCII, unlabeled tape by a Prime computer. The mean pressure data (in millibars) are derived from individual measurements that are sampled at intervals of 30 to 90 min. They are time-weighted daily average pressure values with certain assumptions regarding gaps longer than 3 h. Depending on the location of the gaps and their length, missing data are either filled in by interpolation or extrapolation, or are excluded from the time-weighted statistics. Besides the average pressure, other parameters are provided for each sol including minimum pressure, standard deviation, length of maximum time gap, starting and ending times of large gaps, and other supporting information. There are two separate copies of data from each lander, including a total of 1050 sols of Lander 2 average pressure values available on the tape. For more information, refer to the "Atmospheric Pressure Statistics From the Surface of Mars: the Viking Meteorology Experiment," by J. E. Tillman, available at NSSDC on the data tape. It should be noted that all records of the Lander 1 data contain 4400 ASCII characters, but the last tape record of the Lander 2 data is only 800 characters long, contrary to the format given in the descriptive document.

VIKING 2 LANDER, TOULMIN, 3RD
INORGANIC ANALYSIS

Data set name - SPECTRA PLOTS ON MICROFICHE (*)

NSSDC ID 75-083C-13A, SPECTRA PLOTS ON M/FICHE

Time period covered - 11/21/75 TO 03/01/78
(As verified by NSSDC)

Quantity of data - 23 CARDS OF B/W MICROFICHE

This data set consists of B/W microfiche provided by the investigation team containing logarithmic plots of the data in the spectral history file (see 75-083C-13E). The title on each plot includes Lander id, spectrum number, pc tube, sample or calibration information, command history information, count period (if other than 7.7 s), operator, detector voltage, and date. The x-axis represents energy (channel number), and the y-axis represents intensity that has been normalized to reflect a 30.7-s count period/channel. The pc 1 and 2 data represent the iron-55 radiation source information while pc 3 and 4 data represent the cadmium-109 information.

Data set name - COMMAND, SPECTRA, AND TEMPERATURE HISTORY ON MAGNETIC TAPE

NSSDC ID 75-083C-13E, COMMAND, SPECTRA, TEMP HIST MTAPE

Time period covered - 09/03/76 TO 11/01/76
(As verified by NSSDC)

Quantity of data - 3 REELS OF TAPE

These data are on 7-track, 800-bpi, BCD, even-parity

magnetic tape supplied by the investigation team. Each tape contains three files. The command history (file 1) contains the instrument parameters that were sent to the guidance control and sequencing computer (GCSC). The file consists of a header; the number of commands in each group; the number of the first command in each group; the purpose; the command table number; the number of the offset entry; the pc tube number; the high-voltage bias; the code used to identify dump, flag, or sample information; the count period per channel; the window group (start channel); the execution time; the time in seconds to begin execution on Mars; and the predicted number of data frames. The temperature history file (file 2) contains temperature measurements in the XRFS box. The file consists of a header, the total number of temperature groups as provided by the Viking data software (each group contains a maximum of 675 measurements), the number of groups stored in the file, the temperature readings in the XRFS box, and the GCSC time (in seconds) when each temperature was measured. The spectral history file (file 3) contains the instrument response data. The file consists of a header, the spectrum name, raw spectrum data normalized to a count time of 30.7 s per channel, the pc tube that generated the spectrum, the time and date the spectrum was assembled at JPL, the data frame numbers used to make the spectrum, the count period for each data frame, and the name of the operator who generated the spectrum.

Data set name - COMMAND HISTORY ON MICROFICHE

NSSDC ID 75-083C-13F, COMMAND HISTORY ON M*FICHE

Time period covered - 09/06/76 TO 10/21/78
(As verified by NSSDC)

Quantity of data - 1 CARD OF B/W MICROFICHE

This data set, on black and white microfiche, provided by the investigation team, contains instrument parameters that were sent to the guidance control and sequencing computer (GCSC). The tabular files consist of a header, the number of the first command in each group, the purpose of command, the command table number, the pc tube number, the high voltage bias, the code used to identify dump, flag or sample information, the execution time, the predicted number of data frames and GCSC time.

Data set name - TEMPERATURE HISTORY ON MICROFICHE

NSSDC ID 75-083C-13G, TEMPERATURE HISTORY ON M*FICHE

Time period covered - 09/06/76 TO 11/05/78
(As verified by NSSDC)

Quantity of data - 14 CARDS OF B/W MICROFICHE

These data, on black and white microfiche, provided by the investigation team contain temperature measurements, in the order received from the decset, in degrees Fahrenheit. The measurements are further listed after sequencing by time. The guidance control and sequencing computer time, in seconds, is listed as are the sol, Mars local time in hours and minutes, and the temperature in degrees and tenths of degrees. The temperature history is arranged by group with each group containing a maximum of 675 measurements.

********** VIKING 2 ORBITER **********

Data set name - BIBLIOGRAPHY OF THE VIKING MARS SCIENCES

NSSDC ID 75-083A-00D, BIBLIOGRAPHY OF VIKING MARS SCI

Time period covered - (N/A)

Quantity of data - 10 CARDS OF B/W MICROFICHE

This is the first edition, published May 18, 1978, of a bibliography of the scientific results of the Viking missions, the two Landers and the two Orbiters. It attempts to include every publication in a scientific journal of the experimental results, or theoretical interpretation of the Viking data, descriptions of the scientific instruments that might be of value to scientists utilizing these data and a few general papers or books summarizing the results or describing the mission operations and history. This bibliography does not include abstracts or presentations at scientific meetings, accounts in newspapers and popular magazines, and scientific discussions of Mars that are not directly related to the information acquired by the Viking spacecraft.

VIKING 2 ORBITER, CAMR
ORBITER IMAGING

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-083A-01A, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 10/16/75 TO 06/17/78
(Date supplied by experimenter)

Quantity of data - 13 B/W POSITIVE FRAMES

This data set consists of 4- x 5-in. B/W negatives that were released by the project for public distribution because they were of particular interest. Most show Mars surface features, but one is the first photograph of the earth seen from more than 10 million km in space and shows the earth in a crescent phase. Decriptions of each photograph are included.

Data set name - MOSAICS MADE FROM THE BLACK AND WHITE RECTILINEAR AND ORTHOGRAPHIC PHOTOGRAPHY (*)

NSSDC ID 75-083A-01B, B/W MOSAICS

Time period covered - (N/A)

Quantity of data - 377 B/W POSITIVE FRAMES

These data, supplied by the Orbiter Imaging Team, are 4- x 5-in. B/W mosaics. Hand-rendered mosaics are available for much of the coverage obtained by the Viking Orbiter cameras. For the most part, these mosaics provide contiguous coverage of scenes made up from individual images and no attempt has been made to conform to a global control net. Measurements made from these mosaics will be highly inaccurate. Mosaics produced by the US Geological Survey (USGS) designated as MC quads or MC subquads and built upon the appropriate shaded relief map are valid mapping coverage. Each mosaic, identified by the prefix 211- and a four-digit number, is supplied with a footprint plot providing the individual picno as well as roll and file order numbers for the individual frames making up the mosaic. All of these numbers should be specified when ordering individual frames. In a few cases where the particular version of a frame in the mosaic is not available, a similar version of that frame is designated on the footprint plot. The mosaic summary and index (75-083A-01I) should be used to select these data.

Data set name - B/W RECTILINEAR PHOTOGRAPHY

NSSDC ID 75-083A-01D, RECTILINEAR ORBITAL PHOTOGRAPHY

Time period covered - 08/12/76 TO 06/24/78
(As verified by NSSDC)

Quantity of data -20708 B/W POSITIVES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and represent the surface as viewed from the Orbiter scan platform without geometric corrections for oblique-viewing distortion. Most images are available in two processed versions: the shading corrected (SCR2) version, suitable for albedo contrast and photogrammetric studies; and (2) the high-pass filtered (NGF) version, which provides maximum feature discriminability (at the cost of true albedo contrast). Both versions have been processed to remove or fill in telemetry bit errors, camera blemishes, and nonuniformities in vidicon response. Corrected data are then linearly stretched in contrast to fill the dynamic range of the film. Each processed picture has a data block containing all pertinent information for the image. To select these data, use the SEDR (75-083A-01G); the rectilinear and orthographic photography index (75-083A-01K); the quadrant, latitude, and longitude index (75-083A-01M); or the 10-deg box index (75-083A-01H). For ordering, specify both the picno and the roll/file number.

Data set name - BLACK AND WHITE ORTHOGRAPHIC PHOTOGRAPHY

NSSDC ID 75-083A-01E, BLACK & WHITE ORTHOGRAPHIC PHOTOS

Time period covered - 08/12/76 TO 11/27/77
(As verified by NSSDC)

Quantity of data - 9649 B/W POSITIVES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and are a subset of the total image set that has been transformed to an orthographic mapping projection so that the scene appears as if viewed from directly overhead. The center of projection in all cases is the center point of the frame. To preserve maximum discriminability of features, the size of the projected image is formatted to fill, as nearly as possible, the mask dimensions (1584 pixels square). Therefore, the scale will vary from image to image in a series. This is especially evident in those sequences obtained at periapsis when the viewing geometry and range are changing most rapidly. The scale of each image is given in the data block

under SCO (km/pixel). A scale bar to the right of the image facilitates photographic reconstruction of a series of images to a similar scale. Not all images are available in the orthographic version. Most orthographic images available were produced in the NGF version and, therefore, do not present true albedo characteristics. To select these data, use the SEDR (75-083A-01G); the rectilinear and orthographic photography index (75-083A-01K); the quadrant, latitude, and longitude index (75-083A-01M); or the 10-deg box index (75-083A-01H). For ordering, specify both the picno and roll/file number.

Data set name - B/W STEREO PAIRS

NSSDC ID 75-083A-01F, STEREO PAIRS 5X5-INCH FILM

Time period covered - 09/22/76 TO 04/24/77
(As verified by NSSDC)

Quantity of data - 24 B/W POSITIVE FRAMES

These data, supplied by the Orbiter Imaging Team, are on 5- x 5-in. B/W film and consist of frames identified as having overlapping coverage. Stereo studies of Viking images are still in the earliest stages and no stereo product as such has been defined. Frames should be ordered in the orthographic version for stereo studies. It should be understood that the visual imaging subsystem on the Viking Orbiters was not well adapted for acquiring stereo data, and that their acquisition was not a major objective of the primary mission. The pairs contain significant but variable amounts of overlap. In some cases the two frames were taken at widely different times so that lighting conditions did not match well. Stereo coverage of higher quality and greater quantity was obtained in the extended mission.

Data set name - SEDR PHOTOGRAPHIC SUPPORT DATA ON MICROFILM

NSSDC ID 75-083A-01G, SEDR SUPPORT DATA ON MICROFILM

Time period covered - 08/11/76 TO 07/23/78
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set consists of Supplementary Experiment Data Record (SEDR) on microfilm for the orbital photography on the Viking 2 Orbiter and will be the only catalog available for the Orbiter photography. Information supplied in these listings is: picture identification number (Picno) by which it is arranged; camera information such as exposure time, filter used, and which camera; coordinates of center reticle of frame, and processing laboratory and versions of photos, e.g., albedo stretch or maximum discriminability; and mosaic or stereo comments. Definitions of the parameters precede the table. The main table is followed by a one-line listing of the photographs ordered by latitude, proceeding from south to north. This listing contains only the Picno, latitude and longitude of center reticule of each photograph.

Data set name - INDEX BY LATITUDE, LONGITUDE, AND 10 DEGREE BOX ON MICROFICHE

NSSDC ID 75-083A-01H, INDEX BY LAT/LONG AND 10 DEG BOX

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set, supplied by the Orbiter Imaging Team, is on microfilm. It consists of two indexes: one lists the images by center latitude, and the other lists the images by 10-deg boxes of latitude and longitude. The first box is at 0-deg longitude and the north pole, and covers the area 0-deg to 10-deg W longitude and 90-deg to 80-deg N latitude. The second box is 10-deg to 20-deg W longitude and 90-deg to 80-deg N latitude. The latitude and longitude of the intercept point 5 (center of image) are used for these computations, and only images where the intercept point 5 is on the planet (ema5 lt 90-deg) are listed. Each index contains these parameters: picno; frame start count (FSC) number; center latitude; center longitude; emission angle, the angle between the surface normal and the line to the spacecraft; incidence angle, the angle between the surface normal and the line to the sun; range to surface; and Mars time.

Data set name - MOSAIC SUMMARY AND INDEX ON MICROFILM

NSSDC ID 75-083A-01I, MOSAIC SUMMARY AND INDEX, M/FILM

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set, supplied by the Orbiter Imaging Team, consists of a summary and index and sample image of Viking Orbiter mosaics on microfilm. The summary contains identification number, mosaic ID, comments (area or features in view), production time, revolution number, number of images in mosaic, minimum and maximum latitude, and minimum and maximum longitude. This summary is followed by an index ordered by picno number that cross-references the page number of the mosaic in the summary section. The index includes picno, central latitude, and central longitude of each photo in the mosaic.

Data set name - PHOBOS, DEIMOS, STAR, LIMB, AND TERMINATOR IMAGES ON MICROFILM

NSSDC ID 75-083A-01J, INDEX TO PHOBOS, DEIMOS, STAR

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set, supplied by the Orbiter imaging team, is an index of images of the Martian moons, stars, Mars terminator, and Mars limb on microfilm. It lists picno; filter; exposure; the range from the Orbiter to Phobos, Deimos, and the limb of Mars; and the surface coordinates of the corner or center of the picture, if Mars appears in the picture. A "terminator" picture is defined as a picture for which at least one corner is on the unlighted portion of the Mars surface. A "limb" picture has at least one corner off the surface entirely.

Data set name - RECTILINEAR AND ORTHOGRAPHIC PHOTOGRAPHY INDEXES ORDERED BY ROLL/FILE NUMBER

NSSDC ID 75-083A-01K, RECT + ORTHO INDEX BY ROLL FILE

Time period covered - (N/A)

Quantity of data - 4 CARDS OF B/W MICROFICHE

This data set is on B/W microfiche generated at NSSDC from hardcopy supplied by the Orbiter Imaging Team. The data are an index to the rectilinear (75-083A-01D) and orthographic (75-083A-01E) photography, and are sorted by roll/file number. The index lists the picture number (picno) and the version (PROCLAB). The index was periodically updated by the imaging team.

Data set name - PRIME AND EXTENDED MISSION CATALOG ON MICROFICHE

NSSDC ID 75-083A-01L, PRIME, EXT, CONT MISSION PIC CAT

Time period covered - 08/05/76 TO 02/02/77
(As verified by NSSDC)

Quantity of data - 516 CARDS OF B/W MICROFICHE

This data set is on B/W microfiche supplied by the Orbiter Imaging Team. The microfiche cards are in COSATI format with 60 images per card. The top row of each card contains descriptive information such as (1) spacecraft identification, and sequence number; (2) gray scale control; (3) resolution control frame; (4) first and last picno's on the card; and (5) any MTIS target frames that may have accompanied the images on the card. The images are arranged by picno and version. Quality of the microfiche is excellent. Prime mission data are contained on cards 1-96; the extended mission on cards 97-403 and the continuation mission is on cards 404-516.

Data set name - INDEX OF IMAGES ORDERED BY QUADRANT, LATITUDE, AND LONGITUDE ON MICROFILM

NSSDC ID 75-083A-01M, LIST OF IMAGES BY QUAD, LAT/LONG

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

These data, supplied by the Orbiter Imaging Team, are an index of rectilinear, orthographic, and mosaic images ordered by quadrant, latitude, and longitude on 16-mm microfilm generated at NSSDC from hardcopy. A quadrant is one of the 30 sections into which the Mars surface is divided on the set of USGS 1:5,000,000 scale maps. The information listed includes picno, center latitude, center longitude, incidence angle, emission angle, filter, range to surface, SCR-2 version, NGF version, orthographic projection version, and four possible

mosaic appearances. This is considered the best and most complete index for ordering Orbiter images from NSSDC.

Data set name - IPL PROCESSED BLACK AND WHITE PHOTOGRAPHY

NSSDC ID 75-083A-01N, IPL PROCESSED PHOTOGRAPHY

Time period covered - 11/24/76 TO 07/05/78
(As verified by NSSDC)

Quantity of data - 300 B/W POSITIVES

This data set consists of all of the IPL-processed photography provided by the Orbiter team. The photography includes such things as contour mapping, stereo coverage, etc.

Data set name - IPL PROCESSED FALSE COLOR RECONSTRUCTED ORBITER IMAGES (*)

NSSDC ID 75-083A-01O, IPL PROCESSED COLOR PHOTOGRAPHY

Time period covered - 11/04/76 TO 05/30/77
(As verified by NSSDC)

Quantity of data - 34 COLOR NEGATIVE FRAMES

This data consists of color images reconstructed by the Image Processing Laboratory (IPL) of the Jet Propulsion Laboratory. Color elements of the same scene shuttered three times, seconds apart, are recombined using software developed for this purpose. These triplets are usually obtained by using the red, green and violet filters; however, in some cases the blue filter is substituted for the violet. In false color reconstruction, it is necessary to take "perception" into account. Each frame is produced in two ways. The first is the Martian surface as the computer says it must be within a perceptual range of what a group of viewers say they will tolerate. This, in combination with color distortions generated by the GRE (playback device), film, photographic paper, and photolab procedures, produces images which vary slightly in color. The second production is not limited by perceptual parameters.

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 75-083A-01P, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 06/14/78 TO 06/14/78
(As verified by NSSDC)

Quantity of data - 1 COLOR POSITIVE FRAME

These data consist of 4 x 5-inch color negatives released by NASA Headquarters and the Jet Propulsion Laboratory for public distribution. The restriction in reproducing the red spectral range perceived by the human eye cause the coloring in these negatives to be somewhat inaccurate. The imagery covers areas considered to be of high public interest.

Data set name - USGS PHOTOMOSAICS 5M

NSSDC ID 75-083A-01Q, USGS PHOTO MOSAICS 5M

Time period covered - (N/A)

Quantity of data - 179 B/W NEGATIVE FRAMES

This data set consists of B/W 8 x 10 in. negatives of photomosaics, controlled by the 1:5 million Mariner 9 and Viking data, produced by the USGS at Flagstaff, Arizona. The images are mosaics of Viking 1 and Viking 2 Oribiter high-resolution pictures placed on an air-brushed background based on earlier data from Mars. The mosaics were created at 1:1.25 million and scaled to 1:5 million. Each mosaic covers the areal surface for the Mars subquadrangle maps. The legend of the mosaics includes the Mars subquadrangle map number and the center coordinates in deg of longitude and latitude. Longitude and latitude lines at 5 deg intervals are shown where the base image is not covered by the Viking mosaics. Mosaic coverage of the subquadrangle areas varies depending on available images at the time of creation of the mosaics. Footprint sketches showing the Viking pictures numbers accompany the mosaics. These picture numbers can be used in ordering individual frames making up the mosaics.

Data set name - USGS PHOTOMOSAICS 7.5M
(*)

NSSDC ID 75-083A-01R, USGS PHOTOMOSAICS 1:7.5 M

Time period covered - (N/A)

Quantity of data - 155 B/W NEGATIVE FRAMES

This data set consists of B/W 8 x 10 in. negatives of photomosaics, controlled by the 1:5 million Mariner 9 and Viking data, produced by the USGS at Flagstaff, Arizona. The images are mosaics of Viking 1 and Viking 2 Orbiter high-resolution pictures placed on an air-brushed background based on earlier data from Mars. The mosaics were created at 1:1.25 million and scaled to 1:7.5 million. Each mosaic covers the areal surface for the Mars subquadrangle maps. The legend on the mosaics includes the Mars subquadrangle map number and the center coordinates in deg of longitude and latitude. Longitude and latitude lines at 5 deg intervals are shown where the base image is not covered by the Viking mosaics. Mosaic coverage of the subquadrangle areas varies depending on available images at the time of creation of the mosaics. Footprint sketches showing the Viking picture numbers accompany the mosaics. These picture numbers can be used in ordering individual frames making up the mosaics.

Data set name - SEDR QUADRANT AND SUBQUADRANT PLOTS ON MICROFICHE

NSSDC ID 75-083A-01S, SEDR QUAD/SUBQUAD PLOTS

Time period covered - (N/A)

Quantity of data - 73 CARDS OF B/W MICROFICHE

These data, in microfiche supplied by the investigation team, contain a complete listing of all images which make up the USGS mosaics. In addition the image numbers are displayed in the positions where the images are in the mosaic. The mosaic number, spacecraft and date of photo coverage are given at the bottom of each plot. The image resolution is also displayed at the bottom of the plot.

Data set name - MARS IN 3D, MOVIE FILM

NSSDC ID 75-083A-01T, MARS IN 3D, MOVIEFILM

Time period covered - (N/A)

Quantity of data - 900 COLOR NEGATIVES

This movie, on 16mm film, uses an analytic technique for stereo separation (the left eye and right eye film are printed through filters onto a single reel to give superimposed red and green images). It must be viewed with glasses that have red and green filters to allow each eye to see the correct image. The image is in black and white for the scenes which were black and white in the original material, and false color in the remaining scenes. The movie combines techniques, image processing, animation, and stereo movie technology. It includes some stereo scenes acquired by the Viking Orbiter cameras, shots taken at the Jet Propulsion Laboratory showing the operation of the Viking Lander spacecraft, and surface of Mars as viewed in three dimensions, at both Lander sites, by the Viking Lander cameras system. The running time for this movie is 23 minutes. A stereo sound track version of this movie that requires two projectors was made for special showings by JPL. That version is not available from NSSDC.

Data set name - USGS PHOTOMOSAICS 1:2M
(*)

NSSDC ID 75-083A-01V, USGS PHOTOMOSAICS 1:2M

Time period covered - (N/A)

Quantity of data - 80 B/W NEGATIVE FRAMES

This data set contains 8 x 10 negatives. The scale used is 1 to 2000. The negatives are made up from imagery from both Viking 1 and 2 Orbiters. Footprint maps accompany the data.

Data set name - IMAGING DATA ON MAGNETIC TAPE
(*)

NSSDC ID 75-083A-01W, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 08/12/76 TO 06/24/78
(As verified by NSSDC)

Quantity of data - 179 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 26000 images obtained by the Viking 2 Orbiter TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 53 blocks,

containing 32000 bytes per block. Each block is composed of 20 logical records of 1600 bytes each. The first two logical records of the first block contain a label. The label is followed by 1056 logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by Picno., an image sequence number, against tape/file position. For this reason, it is necessary to be able to identify the Picnos. of interest before placing an order.

VIKING 2 ORBITER, FARMER
MARS ATMOSPHERIC WATER DETECTION (MAWD)

Data set name - ATMOSPHERIC WATER RADIANCE/GEOMETRY DATA ON TAPE

NSSDC ID 75-083A-03A, ATMOSPHERIC WATER DATA ON TAPE

Time period covered - 07/31/76 TO 07/24/78
(As verified by NSSDC)

Quantity of data - 25 REELS OF TAPE

This data set contains the results of the atmospheric water detection experiment and a catalog of those results, both residing on 9-track, binary, 800-bpi magnetic tape supplied by the investigation team. The results include the decalibrated values of the infrared radiance from each observation and a variety of geometrical parameters that define the area viewed, and pertinent observational parameters. Each tape record contains all the data from one complete raster (15 consecutive measurements), including the radiances and the area of the surface viewed, followed by average values for the whole raster as well as pertinent geometrical and timing information.

VIKING 2 ORBITER, KIEFFER
INFRARED THERMAL MAPPING (IRTM)

Data set name - DECALIBRATED INFRARED THERMAL MAPPING DATA ON MAGNETIC TAPE

NSSDC ID 75-083A-02A, DECALIBRATED IRTM DATA ON MAGTAPE

Time period covered - 08/11/76 TO 07/24/78
(As verified by NSSDC)

Quantity of data - 20 REELS OF TAPE

These data are contained on 9-track, binary, 800-bpi magnetic tape supplied by the investigation team. They contain the decalibrated values of brightness for every observation and a variety of geometrical parameters to define the area viewed and the pertinent observational parameters. Included are header records specifying the geometry of the orbit and of the spacecraft at the time of the observational sequence, and data records giving the brightness data and the geometric parameters pertaining to each measurement.

VIKING 2 ORBITER, MICHAEL, JR.
ORBITER RADIO SCIENCE

Data set name - SURFACE ELECTRICAL PROPERTY DATA PLOTS ON MICROFILM

NSSDC ID 75-083A-04A, 381 MHZ RELAY LINK

Time period covered - 07/21/76 TO 10/04/76
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data are on 16-mm microfilm generated at NSSDC from paper plots supplied by the Radio Science Team. The plots show amplitude vs time of Lander telemetry signals received by the orbiters. This data set includes Orbiter 1 and Lander 1 and 2 data. There are three sections to the data: multipath residual data from Lander 1 to Orbiter 1, gain and axial ratio data from Lander 2 to Orbiter 2, and gain and axial ratio data from Lander 2 to Orbiter 1.

Data set name - DECALIBRATED RANGE DATA ON MAGNETIC TAPE

NSSDC ID 75-083A-04B, DECALIBRATED RANGE DATA TAPES

Time period covered - (N/A)

These data, on 7-track, 800-bpi tape, consist of a series of estimates of the range between the spacecraft antenna and the tracking station antenna. The data set was produced by the Radio Science Team. For the 'good' range points, which are a subset of the range points on the tracking data tapes (see 75-083A-04D), the results of an extensive calibration program are presented. The parameters listed are time, uncorrected range in nanoseconds, correction for time delay in the spacecraft transponder, correction for time delay in the tracking station equipment, correction for the interplanetary plasma effect (from comparison of S- and X-band data), and final corrected range. The latter should be the best obtainable value of the range between the tracking station antenna and the spacecraft antenna. These data are available from J. Hrenkle at the Jet Propulsion Laboratory (213-354-6288.)

Data set name - LINE OF SIGHT ACCELERATION LISTINGS AND PLOTS

NSSDC ID 75-083A-04F, ACCELERATION LISTS AND PLOTS

Time period covered - 10/00/77 TO 07/00/78
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These data, on microfilm supplied by the experimenter, are gravity data which were obtained from the reduction of Doppler radio tracking data. The results are displayed in tabular listings and plots of line-of-sight accelerations from orbits 433 to 685, covering the time period October 1977 to July 1978. Also displayed in the listings are spacecraft position and velocity at orbit epoch, Doppler residuals, latitude, longitude, and altitude.

Data set name - ACCELERATION GRAVITY DATA ON MAGNETIC TAPE

NSSDC ID 75-083A-04G, GRAVITATIONAL ACCELERATION DATA

Time period covered - 12/16/77 TO 09/28/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, gravitational acceleration data are on 9-track, 1600-bpi, ASCII magnetic tape created on a UNIVAC 1100 computer. Each 80-byte logical record contains spacecraft latitude (Mars true equator of date); spacecraft longitude (Mars true equator of date, positive is East, negative is West); line-of-sight acceleration in millimeters/second squared; spacecraft altitude above the Martian surface; earth latitude (Mars true equator of date at the time of line-of-sight observation); earth longitude; and earth distance from the center of Mars (in millions of km). The data cover orbits 433-685.

********** VOYAGER 1 **********

VOYAGER 1, BRIDGE
PLASMA SPECTROMETERS

Data set name - JUPITER PLASMA SUMMARY DATA (HG COOR) ON MAGNETIC TAPE

NSSDC ID 77-084A-06A, JUPITER PLASMA SUMMARY TAPES (HG)

Time period covered - 03/02/79 TO 03/24/79
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

These combined magnetometer and plasma data in heliographic coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block

identifying the record type. Since data from two experiments are contained in this data set, it is listed under two ID numbers, viz. 77-084A-05A and 77-084A-06A.

Data set name - JUPITER PLASMA SUMMARY DATA (S3 COOR) ON MAGNETIC TAPE

NSSDC ID 77-084A-06B, JUPITER PLASMA SUMMARY TAPES (S3)

Time period covered - 03/02/79 TO 03/16/79
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These combined magnetometer and plasma data in System 3 coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s and 1.92-s averages of the field in System 3 coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are contained in this data set, it is listed under two ID numbers, viz. 77-084A-05B, and 77-084A-06B.

Data set name - JUPITER PLASMA DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-06C, JUPITER PLASMA DATA TAPE

Time period covered - 03/01/79 TO 03/07/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Jupiter plasma analysis data are on 9-track, 6250 bpi, binary magnetic tape created on an IBM 360 computer. There are seven different types of records. All have identical formats and contain time in year, day, hour, minute, second, and milliseconds; data mode (L-mode, M-mode, or electron mode); type of analysis; tape generation date; and a 30-word matrix containing the results of the analysis. These results depend on the mode and type of analysis for the record. The seven different record types are (1) L-mode positive-ion charge densities (moment analyses), (2) M-mode positive-ion charge densities, (3) selected middle magnetosphere L-mode fits, (4) selected middle magnetosphere M-mode fits, (5) continuous middle magnetosphere M-mode fits, (6) Io torus M-mode fits, and (7) electron moment and fit parameters.

Data set name - PLASMA SATURN ENCOUNTER (HG COOR) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-06D, PLASMA SATURN ENCOUNTER (HG COOR)

Time period covered - 11/09/80 TO 11/19/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in spacecraft-centered heliographic coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in spacecraft coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - SATURN ENCOUNTER (L1 COORDINATES) DATA ON MAGNETIC TAPES (*)

NSSDC ID 77-084A-06E, SATURN ENCOUNTER L1 COORD

Time period covered - 08/23/81 TO 08/29/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in Saturn-centered L1 coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The L1 coordinate system is described in Desch and Kaiser, Geophys. Res. Lett. 8, 253, 1981. In this system, the first axis is along the Saturn-spacecraft line, positive away from Saturn. Another axis is parallel to Saturn's meridian plane, positive southward. The final orthogonal axis is parallel to Saturn's equatorial plane and is positive eastward. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in L1 coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

VOYAGER 1, BROADFOOT
ULTRAVIOLET SPECTROSCOPY

Data set name - UV SPECTRAL DATA RECORDS ON MAGNETIC TAPE

NSSDC ID 77-084A-04A, UV SPECTRAL DATA RECORDS

Time period covered - 09/12/77 TO 11/15/79
(Date supplied by experimenter)

Quantity of data - 1 REEL OF TAPE

These UV spectral data records, on magnetic tape, are being held by and are available from the principal investigator, A. L. Broadfoot, at the University of Arizona, Tucson, Arizona. Requesters for these data are referred to him. Data are available for Jupiter and for the interplanetary medium.

Data set name - UV PHOTOMETRY OF SATURN DURING ENCOUNTER

NSSDC ID 77-084A-04B, UV PHOTOMETRY FOR SATURN

Time period covered - (N/A)

These data are being held by and are available from the principal investigator, A. L. Broadfoot, at the University of Arizona, Tucson, Arizona. Requesters are referred to him.

VOYAGER 1, HANEL
INFRARED SPECTROSCOPY AND RADIOMETRY

Data set name - JUPITER INFRARED INTERFEROMETER SPECTROMETER AND RADIOMETER MERGED DATA

NSSDC ID 77-084A-03A, JUPITER IRIS MERGED DATA ON TAPES

Time period covered - 02/02/79 TO 03/15/79
(As verified by NSSDC)

Quantity of data - 9 REELS OF TAPE

These infrared interferometer spectrometer reduced data are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. The first 500 bytes of each record contain header information consisting of calibrated thermal emission spectra, housekeeping data, as well as spacecraft navigation and instrument-pointing information. The remaining 11,076 bytes of each record contain 2,769 radiance values (in ascending wave number order). The reduced data record tapes were created by merging the experimenter-supplied scan platform supplementary tapes, the fixed instrument supplementary tapes and the experimenter data record tapes.

Data set name - SATURN IRIS RADIANCE DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-03B, SATURN IRIS RADIANCE, TAPE

Time period covered - 10/22/80 TO 11/18/80
(As verified by NSSDC)

Quantity of data - 15 REELS OF TAPE

This reduced data set contains radiance values as a function of wave number, calibrated thermal emission spectra, navigation and pointing data, and housekeeping data for the Saturn encounter of Voyager 1. The data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 and supplied to NSSDC by the experimenter. The first 500 bytes of each logical record are header and ephemeris information, and calibrated thermal emission spectra. This is followed by 11,076 bytes containing radiance values as a function of increasing wave number. Each tape contains IRIS records ordered by time. Documentation for these tapes is contained in "Voyager Infrared Interferometer Spectrometer and Radiometer (IRIS)-Documentation for Reduced Data Records (RDR) for the Saturnian System," 1982, NASA X-693-82-30.

VOYAGER 1, KRIMIGIS
LOW-ENERGY CHARGED PARTICLE ANALYZER AND TELESCOPE

Data set name - LOW-ENERGY SECTOR-AVERAGED FLUX DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-07A, LOW-ENERGY SECTOR-AVG. FLUX, TAPE

Time period covered - 02/24/79 TO 03/21/79
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

This data set consists of sector-averaged particle fluxes in the vicinity of Jupiter and is on 9-track, 1600-bpi, binary magnetic tape created on a PDP-11 computer. Each logical record begins with header information dealing with the time interval for which measurements were collected and the averaging interval. This is followed by count rates from 91 data channels in each of 8 sector positions plus a sector average. The species counted, the number of channels, and their energy ranges (in MeV for electrons and MeV/nucleon for other particles) are (1) electrons, 12 channels, 0.015 to greater than 8.5; (2) protons, 8 channels, 0.27 to greater than 240; (3) Z.GE.1, 8 channels, 0.03-4.01; (4) Z.GE.2, 2 channels, 0.98-4.22; (5) alphas, 11 channels, 0.075-64; (6) light nuclei, 3 channels, 0.60-21; (7) medium nuclei, 10 channels, 0.047-200; (8) heavy nuclei, 8 channels, 0.062 to greater than 125; (9) ions, 20 channels, 0.285 to 59; (10) miscellaneous singles, 8 channels; and (11) miscellaneous coincidence, 1 channel. The spacing of channels is generally logarithmic. An estimate of counting rate uncertainties follows this, and is in turn followed by the number of samples which go into determining each count rate (in terms of the basic accumulation interval). The remainder of the data set consists of reduced data. Fluxes corresponding to the count rates mentioned above have been calculated by applying corrections for dead time, geometrical factors, and passband. Following this is an estimate of the flux uncertainties. Time resolution depends on the step rate and can vary from 6 seconds to 6 minutes.

Data set name - LOW-ENERGY TIME-AVERAGED FLUX DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-07B, LOW-ENERGY TIME-AVGD. FLUX, TAPE

Time period covered - 09/07/77 TO 12/30/79
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

This data set consists of time-averaged particle fluxes in interplanetary space and in the vicinity of Jupiter. It is on 9-track, 1600-bpi, binary magnetic tape and was created on a PDP-11 computer. After time averaging, the data have been binned according to sector. Each logical record begins with header information dealing with the time interval for which measurements were collected and the averaging interval. This is followed by count rates from the 91 data channels in each of 8 sector positions plus a sector average. The species counted, the number of channels, and their energy ranges (in MeV for electrons and MeV/nucleon for other particles) are (1) electrons, 12 channels, 0.015 to greater than 8.5; (2) protons, 8 channels, 0.27 to greater than 240; (3) Z.GE.1, 8 channels, 0.03-4.01; (4) Z.GE.2, 2 channels, 0.98-4.22; (5) alphas, 11 channels, 0.075-64; (6) light nuclei, 3 channels, 0.60-21; (7) medium nuclei, 10 channels, 0.047-200; (8) heavy nuclei, 8 channels, 0.062 to greater than 125; (9) ions, 20 channels, 0.285 to 59; (10) miscellaneous singles, 8 channels; and (11) miscellaneous coincidence, 1 channel. The spacing of channels is generally logarithmic. An estimate of counting rate uncertainties which follows this is in turn followed by the number of samples which go into determining each count rate (in terms of the basic accumulation interval). The remainder of the data set consists of reduced data. Fluxes corresponding to the count rates mentioned above have been calculated by applying corrections for dead time, geometrical factors, and passband. Following this is an estimate of the flux uncertainties. The time resolution is usually 15 minutes or 1 hour.

Data set name - SCAN AVERAGE, SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-07C, SCAN AVERAGE,SATURN ENCOUNTER

Time period covered - 11/12/80 TO 11/13/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These low-energy, charged particle, scan average, Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a VAX computer. Each 10,000-byte record contains 100 words of header information; count rates of 100 data channels in 10 sector positions; uncertainties of the count rate data; number of samples of count rates in units of basic accumulation time for mode; fluxes corresponding to the count rates (differential fluxes evaluated at standard values of the energy and corrected for finite passband widths and contamination by undesired species); and flux uncertainties.

VOYAGER 1, NESS
TRIAXIAL FLUXGATE MAGNETOMETERS

Data set name - JUPITER PLASMA SUMMARY DATA (HELIOGRAPHIC COORDINATE SYSTEM) ON MAGNETIC TAPE

NSSDC ID 77-084A-05A, MAGNET. JUPITER SUMMARY (HG COOR)

Time period covered - 02/25/79 TO 03/24/79
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

These combined magnetometer and plasma data in heliographic coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape identification information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are contained in this data set, it is listed under two ID numbers, viz. 77-084A-05A, and 77-084A-06A.

Data set name - JUPITER PLASMA SUMMARY DATA (SYSTEM III COORDINATE SYSTEM) ON MAGNETIC TAPE

NSSDC ID 77-084A-05B, MAGNET. JUPITER SUMMARY (S3 COOR)

Time period covered - 03/02/79 TO 03/16/79
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These combined magnetometer and plasma data in System 3 coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in System 3 coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are combined in this data set, it is listed under two ID numbers, viz. 77-084A-05B, and 77-084A-06B.

Data set name - 48-SEC AVERAGED MAGNETIC FIELD SUMMARY

PLOTS-JUPITER ON MICROFICHE

NSSDC ID 77-084A-05C, 48-SEC MAG FLD PLOTS-JUPITER,FICH

Time period covered - 02/27/79 TO 03/23/79
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of daily plots of 48-s averages of the magnetic field at Jupiter for both Voyagers 1 and 2. They were microfilmed from the publication "Magnetic Field Measurements at Jupiter by Voyagers 1 and 2: Daily Plots of 48 Second Averages" by R. P. Lepping, et al. in NASA TM 83864. These data are also on data set 77-076A-05C. Plots are of f, lambda, delta, and rms vs time.

Data set name - MAGNETOMETER, SATURN ENCOUNTER (HG COOR) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-05D, SATURN ENCOUNTER DATA (HG COOR)

Time period covered - 11/09/80 TO 11/20/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in spacecraft-centered heliographic coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in spacecraft coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - SATURN ENCOUNTER (L1 COORDINATES) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-05E, SATURN ENCOUNTER L1 COORD

Time period covered - 08/23/81 TO 08/29/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in Saturn-centered L1 coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The L1 coordinate system is described in Desch and Kaiser, Geophys. Res. Lett. 8, 253, 1981. In this system, the first axis is along the Saturn-spacecraft line, positive away from Saturn. Another axis is parallel to Saturn's meridian plane, positive southward. The final orthogonal axis is parallel to Saturn's equatorial plane and is positive eastward. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in L1 coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - HOURLY AVERAGED IMF, HG COORDINATES DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-05F, HOUR AVERAGE IMF, HG COORD, TAPE

Time period covered - 09/06/77 TO 02/28/79
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of 9-track binary tapes created on an IBM 3081. One tape contains only Voyager 1 data while the other has data from Voyagers 1 and 2, in two separate files. The tapes contain hour averages of the interplanetary magnetic field. The magnetic field direction is in heliographic coordinates. In detail, each record contains the following parameters: a spacecraft ID, the year, day and hour of observation; scalar and vector averages of the field, and the heliographic coordinates of the spacecraft.

VOYAGER 1, SCARF
PLASMA WAVE (.01-56 KHZ)

Data set name - 24 HOUR PLASMA WAVE PLOTS ON MICROFILM

NSSDC ID 77-084A-13A, 24 HR PLASMA WAVE PLOTS, MFILM

Time period covered - 01/19/79 TO 11/30/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set, submitted by the experimenter, consists of Voyager plasma wave subsystem (PWS) data plots on microfilm. Each plot covers a 24-h interval starting at 0000 UT. Each day spacecraft event time (SCET) is corrected for one-way light time to the earth. The data for each of the 16 step-frequency-receiver (SFR) channels are plotted with time as the abscissa and amplitude as the ordinate. For each channel, a vertical bar is plotted with a height approximately proportional to the log of the amplitude averaged over 96 s (typically), and a line connects the peak values for the same interval above the averages. Hence, the average field strength appears as a solid black area, and the line above represents the peak values. Each channel is identified by a channel number (1-16) on the right of the plot and by the channel center frequency (10 Hz, 17.8 Hz, 31.1 Hz, ..., 56.2 kHz) on the left. The abscissa is labelled with SCET (hr); the radial distance (rJ) from Jupiter in Jovian radii; the magnetic latitude (mlat), in degrees based on the Smith et al. (1975) d4 model; the system III (1965) longitude (long3), in degrees; and the local time (LT) of the spacecraft in hours. The day of year (January 1 equals day 1), year, month, and date are found on the right border. Other labels on the right are the program name and processing date which may be ignored by the user. The spacecraft is identified on the left border; the numbers on the left identified by SCET and FDSC provide a correspondence between SCET and the spacecraft clock and may be ignored by the user. The format designator across the top (Gs-3, OC-1, etc.) gives the spacecraft data format and in most cases may be ignored. When the format designator is CR-n (where n equals 3, 4, 5 or 6) the PWS data rate is reduced, and the number of samples per unit is decreased.

VOYAGER 1, SMITH
IMAGING

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY

NSSDC ID 77-084A-01A, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 12/10/78 TO 11/13/80
(As verified by NSSDC)

Quantity of data - 115 COLOR NEGATIVE FRAMES

This data set consists of 4- x 5-inch color press release photo negatives that were released by the Voyager project office for public distribution. Included are photos of Jupiter, its main features, and some of its satellites including the four Galilean ones. Descriptions are provided with each photograph.

Data set name - SYSTEMATIC MTIS IMAGES OF JUPITER AND ITS SATELLITES

NSSDC ID 77-084A-01B, SYSTEMATIC MTIS IMAGES,JUPITER

Time period covered - 01/04/79 TO 11/13/80
(As verified by NSSDC)

Quantity of data -39799 B/W POSITIVE FRAMES

These data, supplied by the Voyager imaging team, are on 5- x 5-inch film and consist of both Jovian and satellite images. There are two versions of each planetary image: shading and filtered, arranged as vertical pairs in a quad format. Satellite images are full frame with three versions each: shading, filtered, and map grid. Each image is identified by the Picno (picture number), which follows a logical progression throughout the data set. Unless specified otherwise, all versions will be provided for each request. Shading images are useful for albedo studies, while the filtered version provides the most detail. These data are also available in digital tape format from Susan La Vole, mail stop 168-514, Jet Propulsion Laboratory, Pasadena, California.

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY

NSSDC ID 77-084A-01C, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 01/01/79 TO 11/16/80
(As verified by NSSDC)

Quantity of data - 120 B/W NEGATIVE FRAMES

This data set consists of 4- x 5-inch black and white negatives of press release photos that were released by the Voyager project office for public distribution. Included are photos of Jupiter, its main features, and some of its satellites including the four Galilean ones. Descriptions are provided with each photo.

Data set name - PICTURE CATALOG INDEX ON MICROFILM

NSSDC ID 77-084A-01D, VOYAGER INDEX ON MFILM

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of the picture catalog index for Voyagers 1 and 2, listed in order by Picno (picture number). Columns give camera, comment, filter, Experiment Data Record (EDR), spacecraft event time, spacecraft latitude and longitude, subsolar point latitude and longitude, solar incidence angle, spacecraft emission angle, phase angle, subspacecraft azimuth, north azimuth, sun azimuth, resolution, range, and shear velocity information. Definitions are given on the first two pages. This data set is on the same data set as 77-076A-01C.

Data set name - PICTURE CATALOG OF JUPITER ENCOUNTER

NSSDC ID 77-084A-01E, PICTURE CATALOG OF JUP ENCOUNTER

Time period covered - (N/A)

Quantity of data - 200 CARDS OF B/W MICROFICHE

This data set consists of microfiched images of the Mission Testing Image System (MTIS) laboratory photos obtained on the Voyagers 1 and 2 missions, including Jupiter, Saturn and their satellites. It is intended to be used as a catalog. Data blocks are printed below the photo, and intensity plots to the right. This data set is on the same data set as 77-076A-01E.

Data set name - BLACK AND WHITE MOSAICS OF JUPITER'S GALILEAN SATELLITES

NSSDC ID 77-084A-01F, BLACK AND WHITE MOSAICS, JUP SATS

Time period covered - (N/A)

Quantity of data - 39 B/W NEGATIVE FRAMES

This data set consists of 8- X 10-inch B/W photos from Voyagers 1 and 2 of the surfaces of Jupiter's Galilean satellites. In some cases they have a latitude-longitude grid superimposed. This data set is in the same data set as 77-076A-01F.

Data set name - COLOR PHOTOMOSAICS OF JUPITER'S GALILEAN SATELLITES

NSSDC ID 77-084A-01G, COLOR MOSAICS OF JUP'S SATS.

Time period covered - (N/A)

Quantity of data - 1 COLOR POSITIVE FRAME

This data set consists of an 8- X 10-inch color photomosaic map of the surface of Jupiter's Galilean satellite, Io, at the scale of 1:2 million. It was compiled from Voyagers 1 and 2 photos. It is on the same data set as 77-076A-01H.

Data set name - FILTERED AND UNFILTERED IMAGES OF SATURN'S SATELLITES

NSSDC ID 77-084A-01H, IMAGERY OF SATURN'S SATELLIES

Time period covered - (N/A)

Quantity of data - 96 B/W NEGATIVE FRAMES

This data set consists of 4- X 5-inch negatives of filtered and unfiltered images of some of Saturn's satellites. The images range from far to near encounter. At the bottom of the photo, a data block gives processing information, and a gray scale.

Data set name - SELECTED IPL IMAGES OF SATURN'S SATELLITES

NSSDC ID 77-084A-01I, SELECTED IPL IMAGES OF SATURN SAT

Time period covered - (N/A)

Quantity of data - 100 B/W NEGATIVES

This data set consists of Voyagers 1 and 2 selected photos of some of Saturn's moons with various processings for albedo and detail. A data block giving the process parameters is printed below the photo, and a brightness graph is printed to the right.

Data set name - BLACK AND WHITE SYSTEMATIC MTIS IMAGES OF SATURN

NSSDC ID 77-084A-01J, SYSTEMATIC MTIS IMAGES,SATURN

Time period covered - (N/A)

Quantity of data -42873 B/W POSITIVE FRAMES

This data set consists of Voyager 1 MTIS laboratory imagery of Saturn and its satellites at encounter. Below the picture is a block of supporting data with information concerning camera, filter, errors, stretch factors, and center coordinates. At the side are three graphs giving input, processing, and output intensities. The quality of the photos is good and they can be used for some scientific purposes.

Data set name - PICTURE CATALOG OF SATURN ENCOUNTER

NSSDC ID 77-084A-01K, PICTURE CATALOG OF SAT ENCOUNTER

Time period covered - (N/A)

Quantity of data - 155 CARDS OF B/W MICROFICHE

This data set consists of microfiche of the Voyager 1 IPL laboratory imagery of Saturn and its satellites at encounter. Below the picture is a block of supporting data with information concerning camera, filter, errors, stretch factors, and center coordinates. At the side are three graphs giving decal, filtered, and mask intensities. Quality is good and the pictures can be used for some scientific purposes.

Data set name - FOOTPRINTS AND INDEX AIRBRUSH MAPS OF GALILEAN SATELLITES OF JUPITER (*)

NSSDC ID 77-084A-01L, FOOTPRINTS+AIRBR MAPS OF JUP SATS

Time period covered - (N/A)

Quantity of data - 24 B/W NEGATIVE FRAMES

This data set consists of 8- X 10-inch negatives of airbrush maps of the Jovian satellites. The maps of Europa are final drawings, and those of Io are preliminary. The maps themselves, available for distribution from USGS, will be published as they are completed.

Data set name - IMAGING DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-01M, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 01/04/79 TO 11/17/80
(As verified by NSSDC)

Quantity of data - 257 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 38000 images obtained by the Voyager 1 TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 33 blocks, containing 32000 bytes per block. Each block is composed of 25 logical records of 1280 bytes each. The first three logical records of the first block contain a label. The label is followed by 800

logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by FDS count, a spacecraft event time, against tape/file position. For this reason, it is necessary to be able to identify the FDS counts of interest before placing an order.

VOYAGER 1, STONE
HIGH- AND MODERATELY LOW-ENERGY
COSMIC-RAY TELESCOPE

Data set name - JUPITER FLUX TIME-HISTORY RECORDS DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-08A, JUPITER FLUX TIME-HISTORY RECORDS

Time period covered - 02/28/79 TO 03/17/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Jupiter encounter cosmic ray data are on 9-track, 1600-bpi, mixed-mode magnetic tape created on an IBM 360 computer. Each tape contains nine files consisting of a number of flux time-history records. Each record contains a count of the number of data items whose time-history is included in the record; a count of the number of averaging intervals; definitions of data items included in the record; and averaging interval entries containing time in year, month, day, hour, minute, and second, and a flux word consisting of one of nine available proton and electron flux rates.

VOYAGER 1, TYLER
RADIO SCIENCE TEAM

Data set name - COMPLEX ENVELOPE OCCULTATION SIGNALS DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02A, COMPLEX ENVELOPE OCCULTATION SIGN

Time period covered - 03/05/79 TO 03/05/79
(As verified by NSSDC)

Quantity of data - 7 REELS OF TAPE

Complex envelope occultation signals data are on 9-track, 800-bpi, ASCII magnetic tape created on a Data General Eclipse S/250 computer. The first record on tape contains descriptive text and the values needed to compute event times, frequencies, sampling rates, and bandwidth. The first data record contains 13-cm (S-band) samples; then the next three contain 3.6-cm (X-band) samples. The pattern in groups of four records is repeated for the remainder of the tape. The first sample in an S-band record coincides with the first sample in the X-band record which immediately follows. It should be noted that the first S- and X-band data records on each tape begin with sample values of zero which result from the filtering methods and are required for time alignment.

Data set name - JUPITER OCCULTATION, MERGED OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02B, MERGED OCCULTATION DATA

Time period covered - 03/05/79 TO 07/10/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, merged occultation data are on 9-track, 800-bpi, ASCII magnetic tape created on a Data General Eclipse S/250 computer. The data are blocked with nine 80-byte logical records per physical record. There are two file types, one containing trajectory information and the other radio frequency information. The trajectory file consists of three header records followed by five data records per time tag as follows: number of time points in file; spacecraft no.; ephemeris time (s); approximate one-way light time (s); sun position; and spacecraft and earth position and velocity. The radio frequency file consists of four header records followed by two data records per time tag as follows: number of time points in file; spacecraft no.; receiving station no.; spacecraft oscillator frequency (Hz); year and day of year; seconds past midnight; S-band received and residual frequency (Hz); S-band received power (dB); X-band received and residual frequency (Hz); and X-band received power (dB). All position and velocity vectors are Jupiter-centered in the earth-mean-equator 1950 coordinate system.

Data set name - RADIO OCCULTATION BY SATURN'S RINGS ON MAGNETIC TAPE

NSSDC ID 77-084A-02C, RADIO OCCULTATION-SATURN'S RINGS

Time period covered - 11/13/80 TO 11/13/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of radio occultation data by Saturn's rings, and was supplied by the experimenter on 9-track, 800-bpi, binary magnetic tape created on a Data Eclipse S-250A computer. The first file contains one 1200-byte record of identification information. File 2 contains 13-cm data consisting of peak power; standard deviation and frequency of peak; maximum signal; integrated power; correlation; mean noise; standard deviation of noise; system temperatures for 13-cm and 3.6-cm wavelength (right and left circular polarization); receive time (seconds from 1950); receive time in day of year, hours, minutes, seconds and fractional seconds; earth and deep space station position and velocity; transmit time in seconds from 1950 and day of year, hours, minutes, seconds and fractional seconds; Saturn and Voyager position and velocity; high gain antenna boresight unit vector; intersection time and point position; radial distance to intersection point; azimuthal position of intersection point longitude on Saturn of sub-intersection point; and record number. File 3 is identical to file 2 but contains 3.6-cm data.

Data set name - SATURN RADIO OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02D, SATURN RADIO OCCULTATION DATA,TAP

Time period covered - 11/13/80 TO 11/13/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These Saturn radio occultation data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The tape contains Saturn entry and exit frequency and amplitude data; and entry and exit trajectory data. Each frequency and amplitude file contains a header with the number of data records in the file; spacecraft ID; entry, exit flag; transmitting and receiving station numbers; communications mode; and frequency bands. The data records contain time in year, day of year, and seconds past midnight; S- and X-band received RF frequency (Hz); and S- and X-band received power (dB). Each trajectory file begins with a header containing number of data records in file; spacecraft ID; entry, exit flag; file ID; transmitting and receiving station numbers; speed of light (km/s); difference between ephemeris and universal times (s); and approximate one way light time (s). Each trajectory data record contains spacecraft event ephemeris time (seconds past 1950); occulting body to spacecraft distance and velocity, earth distance and velocity, and sun distance and velocity.

Data set name - TITAN RADIO OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02E, TITAN RADIO OCCULTATION DATA,TAPE

Time period covered - 11/12/80 TO 11/12/80
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These Titan radio occultation data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The tape contains Titan entry and exit frequency and amplitude data, and entry and exit trajectory data. Each frequency and amplitude file contains a header with the number of data records in the file; spacecraft ID; entry, exit flag; transmitting and receiving station numbers; communications mode; and frequency bands. The data records contain time in year, day of year, and seconds past midnight; S- and X-band received RF frequency (Hz); and S- and X-band received power (dB). Each trajectory file begins with a header containing number of data records in file; spacecraft ID; entry, exit flag; file ID; transmitting and receiving station numbers; speed of light (km/s); difference between ephemeris and universal times (s); and approximate one way light time (s). Each trajectory data record contains spacecraft event ephemeris time (seconds past 1950); occulting body to spacecraft distance and velocity, earth distance and velocity, and sun distance and velocity.

Data set name - SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02F, SATURN ENCOUNTER DATA ON MAG TAPE

Time period covered - 10/21/80 TO 12/05/80
(As verified by NSSDC)

Quantity of data - 14 REELS OF TAPE

These Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a UNIVAC 1108 computer. Each 1792-word physical block contains a 64-word file identification record, a 64-word transponder record, and 26 tracking data records. The file ID record identifies the tape and gives the time the tape was created. The transponder record contains the instrument on and off times (in year, day of year, hour, minute, and second of day); the network ID; station number; and transmitter type and frequency. Each tracking data record contains Doppler frequency, range, and tracking station information along with a record time tag and spacecraft, network, and station identification.

Data set name - RADIO OCCULTATION, TITAN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02G, RADIO OCCULT,TITAN ENCOUNT (MED)

Time period covered - 11/12/80 TO 11/12/80
(As verified by NSSDC)

Quantity of data - 8 REELS OF TAPE

These experimenter-supplied, radio occultation, Titan encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a Data General Eclipse S-250 computer. After filtering and decimation, the data from the medium band system were stored in records 600 words (64 bits) long. The first 88 complex words comprise a header consisting of time and day of first sample; number of complex samples per record; sample period (microseconds); decimation ratio; first and last frequency in passband (Hz); date and time of processing; tape and file identification; spacecraft and station numbers; real-time recorder and data channel number. Following the header information are 512 complex data values representing the output from the filtering and decimation process.

Data set name - RADIO OCCULTATION, SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-02H, RADIO OCCULT,SATURN ENCOUNT (NAR)

Time period covered - 11/13/80 TO 11/13/80
(As verified by NSSDC)

Quantity of data - 5 REELS OF TAPE

These experimenter-supplied, radio occultation, Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a Data General Eclipse S-250 computer. The filtered and decimated data from the narrow band system are stored in data records of 512 complex words (64 bits). The first data record contains S-band samples, the next three contain X-band samples. This pattern in groups of four records is repeated for the remainder of the file. The first sample in an S-band record coincides with the first sample in the X-band record it precedes. After filtering and decimation, the sampling rates are exactly 625 Hz at S-band and 1875 Hz at X-band. The first record in each file is 15 complex words in length, and contains descriptive information consisting of time of first sample in file; input tape name; decimation ratio for filtering; first filter bin for S-band and X-band; and processing date and time.

Data set name - RADIO OCCULTATION, SATURN ENCOUNTER (MED)

NSSDC ID 77-084A-02I, RADIO OCCULT,SATURN ENCOUNT (MED)

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, radio occultation, Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a Data General Eclipse S-250 computer. After filtering and decimation, the data from the medium band system were stored in records 600 complex (64 bits) long. The first 88 complex words comprise a header consisting of time and day of first sample; number of complex samples per record; sample period (microseconds); decimation ratio; first and last frequency in passband (Hz); date and time of processing; tape and file identification; spacecraft and station numbers; and real-time recorder and data channel number. Following the header information are 512 complex data values representing the output from the filtering and decimation process.

Data set name - OPACITY AND PHASE OF RINGS DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-084A-02J, OPACITY AND PHASE OF RINGS

Time period covered - (N/A)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied data are on 9-track, 1600-bpi magnetic tape and consist of X- and S-band opacity and phase of Saturn's rings as derived from the Radio Occultation Experiment on Voyager 1. The data have been processed to improve their spatial resolution. An inversion filter has been used to derive an approximation to the true profile of opacity and phase by taking into account the diffraction effects of the rings. The data file, File 3 on the tape, contains both pre- and post-inversion data. File 1 on the tape contains a "simulated impulse response" - that is, the data that would be generated by the inversion filter if the ring contained an extremely narrow transparent gap in an otherwise opaque ring. File 2 contains a similar "simulated step response," which illustrates how an infinitely sharp transition from an opaque ring to free space would appear after inversion. The first file on the tape, File 0 (ASCII format), contains documentation of the contents of the tape, including a general description, information on file formats, record formats, number conventions, and a sample program to read the data from the tape.

VOYAGER 1, WARWICK
PLANETARY RADIO ASTRONOMY

Data set name - LOW BAND DYNAMIC SPECTRA PLOTS,JUPITER

NSSDC ID 77-084A-10A, LOW BAND DYN SPECTRA PLOTS,JUP

Time period covered - 09/05/77 TO 12/31/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These plots, microfilmed by NSSDC from hardcopy data supplied by the experimenter, were produced on a 12-inch Versatec electrostatic plotter with 200 dot/inch resolution. The date (ymmdd or yymmdd) and the spacecraft (V 1 or V 2) are displayed on the right hand side of each plot. The plot consists of four panels. The first panel has no identifier; the second is labeled T (total power), the third R (right-hand polarization), and the fourth L (left-hand polarization). The vertical axis for each panel represents the frequency with the first tick mark equal to 0.25 MHz and each tick mark increasing by 0.25 MHz up to 1.25 MHz (the frequency increases in the downward direction). The horizontal axis represents spacecraft event time where each tick is equal to 1 hour. In the lower three panels (T, R, and L) the darkness is proportional to the logarithmic intensity of the signal above a computed background. The lower two panels represent the frame averages of R and L measurements. The sum of these two is shown in the T panel. Their difference gives the polarization sense displayed in the top panel (unlabeled), where white (black) represents a dominance of right-hand (left-hand) polarization. Supporting documentation with a more thorough data description appears at the beginning of the microfilm reel.

Data set name - HIGH BAND DYNAMIC SPECTRA PLOTS,JUPITER

NSSDC ID 77-084A-10B, HIGH BAND DYN SPECTRA PLOTS,JUP

Time period covered - 02/01/79 TO 04/29/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These plots, microfilmed by NSSDC from hardcopy data supplied by the experimenter, were produced on a 12-inch Versatec electrostatic plotter with 200 dot/inch resolution. The date (ymmdd or yymmdd) and the spacecraft (V 1 or V 2) are displayed on the right hand side of each plot. The plot consists of four panels. The first panel has no identifier; the second is labeled T (total power), the third R (right-hand polarization), and the fourth L (left-hand polarization). The vertical axis for each panel represents the frequency with the first tick mark equal to 0.25 MHz and each tick mark increasing by 0.25 MHz up to 1.25 MHz (the frequency increases in the downward direction). The horizontal axis represents spacecraft event time where each tick is equal to 1 hour. In the lower three panels (T, R, and L) the darkness is proportional to the logarithmic intensity of the signal above a computed background. The lower two panels represent the frame averages of R and L measurements. The sum of these two is shown in the T panel. Their difference gives the polarization sense displayed in the top panel (unlabeled), where white (black) represents a dominance of right-hand (left-hand) polarization. Supporting documentation with a more thorough data description appears at the beginning of the microfilm reel.

Data set name - PLANETARY RADIO ASTRONOMY DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-10C, PLANETARY RADIO ASTRONOMY DATA

Time period covered - 09/05/77 TO 03/31/80
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These experimenter-supplied, planetary radio astronomy data are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. Each 32,484-byte physical block contains forty 812-byte logical records. A data record consists of the date in year, month and day; spacecraft event time in elapsed milliseconds; telemetry mode (cruise mode data rates in frame completion times from 48s to 2880 s); and the averaged received power for all 199 frequencies in descending order over the frame (in millibels) for 70 low-frequency and 128 high-frequency channels. There is an extra frequency available in the high band corresponding to 40,550 kHz (although it is usually set to zero).

Data set name - DECAMETRIC EMISSION CATALOG (15-40 MHZ) DATA ON MAGNETIC TAPE

NSSDC ID 77-084A-10D, DECAMETRIC EMISSION CAT.15-40 MHZ

Time period covered - 02/01/79 TO 04/05/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

The data set consists of a list of Jupiter's decametric radio emission (DAM) recorded by the Voyager Planetary Radio Astronomy (PRA) experiment during periods in 1979 adjacent to encounter. The events were read from the Voyager spectral records in the frequency range 15 to 40 MHz. Each event is listed by a day number and the date with the beginning and end times in spacecraft ephemeris time (SCET). The upper and lower frequency limits of the event are given in MHz. The corresponding System III (1965.0) central meridian longitudes and the Io-phase values are given for each event. For further details see Barrow, Astronomy and Astrophysics Supplement Series, v. 46, p. 111, 1981.

Data set name - LOW BAND DYNAMIC SPECTRA PLOTS,SATURN

NSSDC ID 77-084A-10E, LOW BAND DYN SPECTRA PLOTS,SAT

Time period covered - 01/01/80 TO 05/16/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm of the low-band dynamic spectra from the Radio Astronomy experiment on Voyager 1. Four shaded spectral plots are displayed on each frame, giving frequency vs spacecraft event time in hours of the day. The top spectrum is for polarization, where white is for right-handed dominance, and black is for left-handed dominance; the T-spectrum is for total power (sum of right and left); the R-spectrum is for right-hand power; and the L-spectrum is for left-hand power. Data set -10F, which is for the high-band dynamic spectra, is on the same roll.

Data set name - HIGH BAND DYNAMIC SPECTRA PLOTS,SATURN

NSSDC ID 77-084A-10F, HIGH BAND DYN SPECTRA PLOTS,SAT

Time period covered - 01/01/80 TO 05/16/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm of the high-band dynamic spectra from the Radio Astronomy experiment on Voyager 1. Four shaded spectra are displayed in each frame, giving frequency vs spacecraft event time in hours of the day. The top spectrum is for polarization, where white is for right-hand dominance, and black is for left-hand dominance; the T-spectrum is for total power (sum of left and right); the R-spectrum is for right-hand power; and the L-spectrum is for left-hand power. This data set is on the same roll as -10E (low-band).

********** VOYAGER 2 **********

VOYAGER 2, BRIDGE
PLASMA SPECTROMETERS

Data set name - JUPITER PLASMA SUMMARY DATA (HG COOR) ON MAGNETIC TAPE

NSSDC ID 77-076A-06A, JUPITER PLASMA SUMMARY TAPES (HG)

Time period covered - 06/19/79 TO 08/18/79
(As verified by NSSDC)

Quantity of data - 15 REELS OF TAPE

These combined magnetometer and plasma data in heliographic coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates, 48-s averages in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are on this data set, it is listed under two ID numbers, viz. 77-076A-05A and 77-076A-06A.

Data set name - JUPITER PLASMA SUMMARY (S3 COOR) DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-06B, JUPITER PLASMA SUMMARY TAPES (S3)

Time period covered - 07/04/79 TO 08/12/79
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These combined magnetometer and plasma data in System 3 coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in System 3 coordinates, 48-s averages in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma records consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on a record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are on this data set, it is listed under two ID numbers, viz. 77-076A-05B and 77-076A-06B.

Data set name - JUPITER PLASMA ANALYZED DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-06C, JUPITER PLASMA ANALYZED DATA TAPE

Time period covered - 07/04/79 TO 07/12/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Jupiter plasma analysis data are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. There are seven different types of records. All are formatted identically and contain time in year, day, hour, minute, second, and millisecond; data mode (L-mode, M-mode or electron mode); type of analysis; tape generation date; and a 30-word matrix containing the results of the analysis. These results depend on the mode and type of analysis for the record. The seven different record types are (1) L-mode positive-ion charge densities (moment analyses), (2) M-mode positive-ion charge densities, (3) selected middle magnetosphere L-mode fits, (4) selected middle magnetosphere M-mode fits, (5) continuous middle magnetosphere M-mode fits, (6) Io torus M-mode fits, and (7) electron moment and fit parameters.

Data set name - PLASMA SATURN ENCOUNTER (HG COOR) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-06D, PLASMA SATURN ENCOUNTER (HG COOR)

Time period covered - 08/23/81 TO 09/02/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in spacecraft-centered heliographic coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in spacecraft coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - SATURN ENCOUNTER (L1 COORDINATES) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-06E, SATURN ENCOUNTER L1 COORD

Time period covered - 11/09/80 TO 11/18/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in Saturn-centered L1 coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The L1 coordinate system is described in Desch and Kaiser, Geophys. Res. Lett. 8, 253, 1981. In this system, the first axis is along the Saturn-spacecraft line, positive away from Saturn. Another axis is parallel to Saturn's meridian plane, positive southward. The final orthogonal axis is parallel to Saturn's ecuatorial plane and is positive eastward. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science,and engineering. The header records contain spacecraft icentification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in L1 coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

VOYAGER 2, BROADFOOT
ULTRAVIOLET SPECTROSCOPY

Data set name - UV SPECTRAL DATA RECORDS ON MAGNETIC TAPE

NSSDC ID 77-076A-04A, UV SPECTRAL DATA RECORDS

Time period covered - 10/27/80 TO 10/27/80
(Date supplied by experimenter)

Quantity of data - 1 REEL OF TAPE

These UV spectral data records, on magnetic tape, are being held by and are available from the principal investigator, A. L. Broadfoot, at the University of Arizona, Tucson, Arizona. Requesters for these data are referred to him. They are available for both Jupiter and Saturn as well as the interplanetary medium.

Data set name - UV SPECTROSCOPY DATA, INTERPLANETARY MEDIUM, TAPE.

NSSDC ID 77-076A-04B, UV INTERPLAN. DATA TAPE

Time period covered - (N/A)

These data, on magnetic tape, are held by the principal inestigator, A. L. Broadfoot at the University of Arizona, Tucson, Arizona. Requesters for these data are referred to him. These data are for the interplanetary medium only.

VOYAGER 2, HANEL
INFRARED SPECTROSCOPY AND RADIOMETRY

Data set name - JUPITER INFRARED INTERFEROMETER SPECTROMETER AND RADIOMETER MERGED DATA

NSSDC ID 77-076A-03A, JUPITER IRIS MERGED DATA ON TAPES

Time period covered - 06/21/79 TO 07/18/79
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These infrared interferometer spectrometer reduced data are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. The first 500 bytes of each record contain header information consisting of calibrated thermal emission spectra, housekeeping data, as well as spacecraft navigation and instrument-pointing information. The remaining 11,076 bytes of each record contain 2,769 radiance values (in ascending wave number order). The reduced data record tapes were created by merging the experimenter-supplied scan platform supplementary tapes, the fixed instrument supplementary tapes, and the experimenter data record tapes.

Data set name - SATURN IRIS RADIANCE DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-03B, SATURN IRIS RADIANCE, TAPE

Time period covered - 08/13/81 TO 09/04/81
(As verified by NSSDC)

Quantity of data - 11 REELS OF TAPE

This reduced data set contains radiance values as a function of wave number, calibrated thermal emission spectra, navigation and pointing data, and housekeeping data for the Saturn encounter of Voyager 2. The data are on 9-track, 1600-bpi, binary magnetic tape created on an IBM 360 and supplied to NSSDC by the experimenter. The first 500 bytes of each logical record are header and ephemeris information, and calibrated thermal emission spectra. This is followed by 11,076 bytes containing radiance values as a function of increasing wave number. Each tape contains IRIS records ordered by time. Documentation for these tapes is contained in "Voyager Infrared Interferometer Spectrometer and Radiometer (IRIS)-Documentation for Reduced Data Records (RDR) for the Saturnian System," 1982, NASA X-693-82-30.

VOYAGER 2, KRIMIGIS
LOW-ENERGY CHARGED PARTICLE ANALYZER AND TELESCOPE

Data set name - LOW-ENERGY SECTOR-AVERAGED FLUX DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-07A, LOW-ENERGY SECTOR-AVG. FLUX, TAPE

Time period covered - 07/03/79 TO 07/25/79
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

This data set consists of sector-averaged particle fluxes in the vicinity of Jupiter and is on 9-track, 1600-bpi, binary magnetic tape created on a PDP-11 computer. Each logical record begins with header information dealing with the time interval for which measurements were collected and the averaging interval. This is followed by count rates from 76 data channels in each of 8 sector positions plus a sector average. The species counted, the number of channels, and their energy ranges (in MeV for electrons and MeV/nucleon for other particles) are (1) electrons, 17 channels, 0.015 to greater than 6; (2) protons, 8 channels, 0.27 to greater than 240; (3) Z.GE.1, 8 channels, 0.03-4.01; (4) Z.GE.2, 2 channels, 0.98-4.22; (5) alphas, 11 channels, 0.075-64; (6) light nuclei, 3 channels, 0.60-21; (7) medium nuclei, 10 channels, 0.047-200; (8) heavy nuclei, 8 channels, 0.062 to greater than 125; (9) miscellaneous singles, 8 channels; and (10) miscellaneous coincidence, 1 channel. The spacing of channels is generally logarithmic. An estimate of counting rate uncertainties follows this, and is in turn followed by the number of samples which go into determining each count rate (in terms of the basic accumulation interval). The remainder of the data set consists of reduced data. Fluxes corresponding to the count rates mentioned above have been calculated by applying corrections for dead time, geometrical factors, and passband. Following this is an estimate of the flux uncertainties. Time resolution depends on the step rate and can vary from 6 seconds to 6 minutes.

Data set name - LOW-ENERGY TIME-AVERAGED FLUX DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-07B, LOW-ENERGY TIME-AVGD. FLUX, TAPE

Time period covered - 06/09/79 TO 07/23/79
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of time-averaged particle fluxes in the vicinity of Jupiter. It is on 9-track, 1600-bpi, binary magnetic tape and was created on a PDP-11 computer. After time averaging, the data have been binned according to sector. Each logical record begins with header information dealing with the time interval for which measurements were collected and the averaging interval. This is followed by count rates from the 76 data channels in each of 8 sector positions plus a sector average. The species counted, the number of channels, and their energy ranges (in MeV for electrons and MeV/nucleon for other particles) are (1) electrons, 17 channels, 0.015 to greater than 6; (2) protons, 8 channels, 0.27 to greater than 240; (3) Z.GE.1, 8 channels, 0.03-4.01; (4) Z.GE.2, 2 channels, 0.98-4.22; (5) alphas, 11 channels, 0.075-64; (6) light nuclei, 3 channels, 0.60-21; (7) medium nuclei, 10 channels, 0.047-200; (8) heavy nuclei, 8 channels, 0.062 to greater than 125; (9) miscellaneous singles, 8 channels; and (10) miscellaneous coincidence, 1 channel. The spacing of channels is generally logarithmic. An estimate of counting rate uncertainties which follows this is in turn followed by the number of samples which go into determining each count rate (in terms of the basic accumulation interval). The remainder of the data set consists of reduced data. Fluxes corresponding to the count rates mentioned above have been calculated by applying corrections for dead time, geometrical factors, and passband. Following this is an estimate of the flux uncertainties. The time resolution is usually 15 minutes or 1 hour.

Data set name - SCAN AVERAGE, SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-07C, SCAN AVERAGE,SATURN ENCOUNTER

Time period covered - 08/24/81 TO 08/25/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These low energy-charged, particle scan average, Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a VAX computer. Each 10,000-byte record contains 100 words of header information; count rates of 100 data channels in 10 sector positions; uncertainties of the count rate data; number of samples of count rates in units of basic accumulation time for mode; fluxes corresponding to the count rates (differential fluxes evaluated at standard values of the energy and corrected for finite passband widths and contamination by undesired species); and flux uncertainties.

VOYAGER 2, LANE
MULTIFILTER PHOTOPOLARIMETER,
2200-7300 A

Data set name - PHOTOPOLARIMETER JUPITER ENCOUNTER DATA ON TAPE

NSSDC ID 77-076A-11A, PHOTOPOLARIMETER JUPITER ENC DATA

Time period covered - 06/26/79 TO 07/10/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, photopolarimeter Jupiter encounter data are on 9-track, 800-bpi, ASCII magnetic tape created on a PDP 11/34 computer. The data represent the average count level for a 48-s spacecraft major frame. Each logical data record contains the spacecraft clock time, latitude and longitude (picture body optic axis intercept planetodetic latitude and longitude), phase, emission angle (viewing angle, solar incidence angle, and counts). The encounter period was divided between Voyager experimenters and segments of time became known by the type of observations made. The four data groups submitted in this data set are referred to as north-south map, east-west map, Cloud Z, and Ganymede. The north-south data were taken over a complete Jupiter rotation period 3 days before the Jupiter closest approach. The Cloud Z data were taken in five segments during the Jupiter approach period in order to obtain phase angle coverage of the planet. The Cloud Z data group includes several east-west map swaths where the optic axis traced an equatorial latitude swath from the east limb to the west limb thereby varying the viewing geometry.

Data set name - SATURN,TITAN,AND DELTA SCORPII ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-11B, SATURN,TITAN,DELTA SCORPII ENCNTR

Time period covered - 08/12/81 TO 08/25/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These Saturn encounter data are contained on 9-track, 1600-bpi, ASCII magnetic tape created on a VAX 11/780 computer. The data consist of atmospheric measurements for Saturn and Titan, and a stellar occultation of Saturn's ring system. The Saturn data are divided into three groups: (1) the "East-West Map", (2) the "North-South" scans, and (3) the "Belt" and "Zones" scans. The "East-West" map is a raster scan of the 0.11 deg field of view across Saturn's northern hemisphere at a phase angle of 10 deg. These were limb-to-terminator scans at 5 latitude bands. Group 2, the three "North-South" scans are along the central meridian. The high resolution limb-to-terminator scans in the" Equatorial Zone" and "North Equatorial Belt" at phase angles up to 68 deg are in the third group. The whole disk intensity and polarization observations of Titan cover phase angles from 3 to 154 deg. The stellar occultation data were obtained using the 2640-A filter, the 45-deg analyzer, the 1.0-deg circular aperature, a 0.0075-second integration period, and high-gain voltage. The data have been averaged into bins of 600 integrations. The star, Delta Scorpii, was observed continuously from its emersion from behind Saturn's disk through the shadowed D, C, B, A, and F rings.

VOYAGER 2, NESS
TRIAXIAL FLUXGATE MAGNETOMETERS

Data set name - PLASMA JUPITER SUMMARY DATA (HELIOGRAPHIC COORDINATE SYSTEM) ON MAGNETIC TAPE

NSSDC ID 77-076A-05A, MAGNET. JUPITER SUMMARY (HG COOR)

Time period covered - 06/19/79 TO 08/18/79
(As verified by NSSDC)

Quantity of data - 15 REELS OF TAPE

These combined magnetometer and plasma data in heliographic coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record tape. Since data from two experiments are contained in this data set, it is listed under both ID numbers, viz. 77-076A-05A and 77-076A-06A.

Data set name - PLASMA JUPITER SUMMARY DATA (SYSTEM III COORDINATE SYSTEM) ON MAGNETIC TAPE

NSSDC ID 77-076A-05B, MAGNET. JUPITER SUMMARY (S3 COOR)

Time period covered - 07/04/79 TO 08/12/79
(As verified by NSSDC)

Quantity of data - 10 REELS OF TAPE

These combined magnetometer and plasma data in System 3 coordinates are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. These standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification (ID), time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s and 1.92-s averages of the field in System 3 coordinates, 48-s averages of the field in spacecraft coordinates, and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed, and 2 angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past time on record header block. All of the data records are preceded by a 32-word common header block identifying the record type. Since data from two experiments are on this data set, it is listed under two ID numbers, viz. 77-076A-05B and 77-076A 06B.

Data set name - 48-SEC AVERAGED MAGNETIC FIELD SUMMARY PLOTS-JUPITER ON MICROFICHE

NSSDC ID 77-076A-05C, 48-SEC MAG FLD PLOTS-JUPITER,FICH

Time period covered - 07/02/79 TO 08/14/79
(As verified by NSSDC)

Quantity of data - 2 CARDS OF B/W MICROFICHE

This data set consists of daily plots of 48-s averages of the magnetic field at Jupiter for both Voyagers 1 and 2. The plots were microfilmed from the publication "Magnetic Field Measurements at Jupiter by Voyagers 1 and 2: "Daily Plots of 48 Second Averages" by R. P. Lepping, et al. in NASA TM 83864. These data are also on data set as 77-084A-05C.

Data set name - MAGNETOMETER SATURN ENCOUNTER (HG COOR) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-05D, MAGNET. SATURN ENCOUNTER(HG COOR)

Time period covered - 08/23/81 TO 09/02/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in spacecraft-centered heliographic coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in spacecraft coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - SATURN ENCOUNTER (L1 COORDINATES) DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-05E, SATURN ENCOUNTER L1 COORD

Time period covered - 11/09/80 TO 11/18/80
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

This data set consists of combined magnetometer and plasma data in Saturn-centered L1 coordinates on 9-track, 6250-bpi binary tapes created on an IBM 360 computer. The L1 coordinate system is described in Desch and Kaiser, Geophys. Res. Lett. 8, 253, 1981. In this system, the first axis is along the Saturn-spacecraft line, positive away from Saturn. Another axis is parallel to Saturn's meridian plane, positive southward. The final orthogonal axis is parallel to Saturn's equatorial plane and is positive eastward. The standard label tapes contain variable blocked records consisting of four distinct types of records: header, magnetometer science, plasma science, and engineering. The header records contain spacecraft identification, time of data, time of run, and tape ID information. The magnetometer records contain 48-s, 9.6-s, and 1.92-s averages of the field in heliographic coordinates; 48-s averages of the field in L1 coordinates; and 40 words of Supplemental Experiment Data Record (SEDR) data. The plasma science data consist of plasma flow velocity (speed and two angles), proton number density and temperature, 256 words of raw data, and 50 words of SEDR data. These science records are preceded by a variable-length engineering record containing a value and readout time of the data in seconds past the time on the record header block. All of the data records are preceded by a 32-word common header block identifying the record type.

Data set name - HOURLY AVERAGED IMF, HG COORDINATES DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-05F, HOUR AVERAGE IMF, MG COORD, TAPE

Time period covered - 08/20/77 TO 09/06/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of interplanetary magnetic field measurements on 9-track binary tapes created on an IBM 3081 computer. One tape contains only Voyager 1 data while the other has data from Voyagers 1 and 2, in two separate files. The tapes contain hour averages of the interplanetary magnetic field. The magnetic field direction is in heliographic coordinates. In detail, each record contains the following parameters: a spacecraft ID, the year, day and hour of observation; scalar and vector averages of the field, and the heliographic coordinates of the spacecraft.

VOYAGER 2, SCARF
PLASMA WAVE (.01-56 KHZ)

Data set name - 24-HOUR PLASMA WAVE PLOTS ON MICROFILM

NSSDC ID 77-076A-13A, 24-HR PLASMA WAVE PLOTS, MFILM

Time period covered - 05/25/79 TO 09/05/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF MICROFILM

This data set, submitted by the experimenter, consists of Voyager plasma wave subsystem (PWS) data plots on microfilm. Each plot covers a 24-h interval starting at 0000 UT. Each day spacecraft event time (SCET) is corrected for one-way light time to the earth. The data for each of the 16 step-frequency-receiver (SFR) channels are plotted with time as the abscissa and amplitude as the ordinate. For each channel, a vertical bar is plotted with a height approximately proportional to the log of the amplitude averaged over 96 s (typically), and a line connects the peak values for the same interval above the averages. Hence, the average field strength appears as a solid black area and the line above represents the peak values. Each channel is identified by a channel number (1-16) on the right of the plot and by the channel center frequency (10 Hz, 17.8 Hz, 31.1 Hz, ..., 56.2 kHz) on the left. The abscissa is labelled with SCET (hr); the radial distance (rJ) from Jupiter in Jovian radii; the magnetic latitude (Mlat), in degrees based on the Smith et al. (1975) D4 model; the system III (1965) longitude (long3), in degrees; and the local time (LT) of the spacecraft in hours. The day of year (January 1 equals day 1), year, month, and date are found on the right border. Other labels on the right are the program name and processing date which may be ignored by the user. The spacecraft is identified on the left border; the numbers on the left identified by SCET and FDSC provide a correspondence between SCET and the spacecraft clock and may be ignored by the user. The format designator across the top (3S-3, 0C-1, etc.) gives the spacecraft data format and in most cases may be ignored. When the format designator is CR-n (where n equals 3, 4, 5 or 6) the PWS data rate is reduced, and the number of samples per unit is decreased.

VOYAGER 2, SMITH
IMAGING

Data set name - BLACK AND WHITE PRESS RELEASE PHOTOGRAPHY (*)

NSSDC ID 77-076A-01A, BLACK & WHITE PRESS RELEASE PHOTO

Time period covered - 02/08/78 TO 09/04/81
(As verified by NSSDC)

Quantity of data - 129 B/W NEGATIVE FRAMES

This data set consists of 4- x 5-inch black and white negatives of press release photos that were released by the Voyager Project Office for public distribution. Included are photos of Jupiter and Saturn, their main features, and some of their satellites. Descriptions are provided with each photo.

Data set name - COLOR PRESS RELEASE PHOTOGRAPHY (*)

NSSDC ID 77-076A-01B, COLOR PRESS RELEASE PHOTOGRAPHY

Time period covered - 06/25/79 TO 08/29/81
(As verified by NSSDC)

Quantity of data - 98 COLOR POSITIVE FRAMES

This data set consists of 4- x 5-inch color press release photo negatives that were released by the Voyager Project Office for public distribution. Included are photos of Jupiter and Saturn, their main features, and some of their satellites. Descriptions are provided with each photo.

Data set name - VOYAGER INDEX ON MICROFILM

NSSDC ID 77-076A-01C, VOYAGER INDEX ON MFILM

Time period covered - (N/A)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of the Voyager picture catalog index for both Voyager 1 and 2. It is listed in order by Picno (picture number). Columns give camera, comment, filter, Experiment Data Record (EDR), spacecraft event time, spacecraft latitude and longitude, subsolar point latitude and longitude, solar incidence angle, spacecraft emission angle, phase angle, subspacecraft azimuth, north azimuth, sun azimuth, resolution, range, and shear velocity information. Definitions are given on the first two pages. This data set is on the same data set as 77-084A-01D.

Data set name - SYSTEMATIC MTIS IMAGES OF JUPITER AND ITS SATELLITES

NSSDC ID 77-076A-01D, SYSTEMATIC MTIS IMAGES,JUPITER

Time period covered - 05/01/79 TO 06/25/81
(As verified by NSSDC)

Quantity of data -29272 B/W POSITIVE FRAMES

These data, supplied by the Voyager imaging team, are on 5- x 5-inch film and consist of both Jovian and satellite images. There are two versions of each planetary image: shading and filtered, arranged as vertical pairs in a quad format. Satellite images are full frame with three versions each: shading, filtered and map grid. Each image is identified by the Picno (picture number), which follows a logical progression throughout the data set. Unless specified otherwise, all versions will be provided for each request. Shading images are useful for albedo studies, while the filtered version provides the most detail. These data are available also in digital tape format from Susan La Voie, mail stop 168-514, Jet Propulsion Laboratory, Pasadena, California.

Data set name - PICTURE CATALOG OF JUPITER ENCOUNTER

NSSDC ID 77-076A-01E, PICTURE CATALOG OF JUP ENCOUNTER

Time period covered - (N/A)

Quantity of data - 169 CARDS OF B/W MICROFICHE

This data set consists of microfiche images of the MTIS laboratory photos obtained on the Voyagers 1 and 2 missions, and it is to be used as a catalog. Data blocks are printed below the photo, and intensity plots are printed at the right of the picture. This data set is in the same data set as 77-084A-01E.

Data set name - BLACK AND WHITE MOSAICS OF JUPITER'S GALILEAN SATELLITES

NSSDC ID 77-076A-01F, BLACK & WHITE MOSAICS OF JUP SATS

Time period covered - (N/A)

Quantity of data - 39 B/W NEGATIVE FRAMES

This data set consists of 8- X 10-inch B/W photomosaics of the surfaces of Jupiter's Galilean satellites: Io, Europa, Ganymede, and Callisto. In some cases there is a latitude-longitude grid superimposed. This data set is in the same data set as 77-084A-01F.

Data set name - SELECTED IPL IMAGES OF SATURN'S SATELLITES

NSSDC ID 77-076A-01H, SELECTED IPL IMAGES OF SATURN SAT

Time period covered - (N/A)

Quantity of data - 900 B/W NEGATIVES

This data set consists of photos of selected moons of Saturn with various processings for albedo and detail. A data block giving the process parameters is printed below the photo, and a brightness scale graph is printed to the right of the photo. This data set is in the same data set as 77-084A-01G. These photos are also available in digital tape format from Susan La Voie, mail stop 168-514, Jet Propulsion Laboratory, Pasadena, California.

Data set name - SYSTEMATIC MTIS IMAGES,SATURN ON 5 INCH FILM

NSSDC ID 77-076A-01I, SYSTEMATIC MTIS IMAGES,SATURN

Time period covered - (N/A)

Quantity of data -24026 B/W POSITIVE FRAMES

This data set consists of the Voyager 2 MTIS laboratory imagery of Saturn and its satellites at encounter. Below each picture is a block of supporting data with information concerning camera, filter, errors, stretch factors, and center coordinates. At the side are three graphs giving input, processing, and output intensities. The quality is good, and the photographs can be used for some scientific purposes.

Data set name - PICTURE CATALOG OF SATURN ENCOUNTER

NSSDC ID 77-076A-01J, PICTURE CATALOG OF SAT ENCOUNTER

Time period covered - (N/A)

Quantity of data - 150 CARDS OF B/W MICROFICHE

This data set consists of microfiche from Voyager 2 IPL laboratory imagery of Saturn and its satellites at encounter. Beneath each picture is a block of supporting data with information concerning camera, filter, errors, stretch factors, and center coordinates. At the right side of the picture are three graphs of intensity, one for decal, one for filtered, and one for mask. The quality is good and can be used for some scientific purposes.

Data set name - FOOTPRINTS AND INDEX AIRBRUSH MAPS OF GALILEAN SATELLITES OF JUPITER (*)

NSSDC ID 77-076A-01K, FOOTPRINTS+AIRBR MAPS OF JUP SATS

Time period covered - (N/A)

Quantity of data - 15 B/W NEGATIVE FRAMES

This data set consists of 8- X 10-inch negatives of airbrush maps of the Jovian satellites. The maps of Europa are final drawings, and those of Io are preliminary. The maps themselves, available for distribution from USGS, will be published as they are completed.

Data set name - IMAGING DATA ON MAGNETIC TAPE (*)

NSSDC ID 77-076A-01L, IMAGING DATA ON MAGNETIC TAPE

Time period covered - 04/24/79 TO 08/30/81
(As verified by NSSDC)

Quantity of data - 197 REELS OF TAPE

This data set consists of the Experiment Data Records (EDRs) for the approximately 29000 images obtained by the Voyager 2 TV experiment, stored on 6250-bpi magnetic tapes. The EDRs consist of unprocessed (raw) instrument data in VICAR format. Each image file consists of 33 blocks, containing 32000 bytes per block. Each block is composed of 25 logical records of 1280 bytes each. The first three logical records of the first block contain a label. The label is followed by 800 logical records (one per image line) containing pixel and engineering data. Details of the data set are provided by Martin et al., "Planetary Image Conversion Task: Final Report," JPL Publication 85-50, 1985, which is available at NSSDC. This publication includes the only catalog currently available for the data set. The catalog lists images by FDS count, a spacecraft event time, against tape/file position. For this reason, it is necessary to be able to identify the FDS counts of interest before placing an order.

Data set name - SYSTEMATIC MIPL IMAGES OF URANUS (*)

NSSDC ID 77-076A-01M, SYSTEMATIC MIPL IMAGES, URANUS

Time period covered - (N/A)

Quantity of data -13414 B/W POSITIVE FRAMES

These data, recorded on 5-inch film, are all the images taken during the Uranus encounter, of the planet and its rings and satellites. Two versions of each image are provided: shading-corrected, suitable for photometric studies, and contrast-enhanced, suitable for studies of fine detail. Each image is supported by data blocks, below and alongside, which give pointing information for the camera and the processing history of the image.

VOYAGER 2, STONE

HIGH- AND MODERATELY LOW-ENERGY
COSMIC-RAY TELESCOPE

Data set name - JUPITER FLUX TIME-HISTORY RECORDS DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-08A, JUPITER FLUX TIME-HISTORY RECORDS

Time period covered - 07/03/79 TO 08/04/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, Jupiter encounter cosmic ray data are on 9-track, 1600-bpi, mixed-mode magnetic tape created on an IBM 360 computer. Each tape contains nine files consisting of a number of flux time-history records. Each record contains a count of the number of data items whose time-history is included in the record; a count of number of averaging intervals; definitions of data items included in the record; and averaging interval entries containing time in year, month, day, hour, minute, and second, and a flux word consisting of one of nine available proton and electron flux rates.

VOYAGER 2, TYLER
RADIO SCIENCE TEAM

Data set name - COMPLEX ENVELOPE OCCULTATION SIGNALS DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-02A, COMPLEX ENVELOPE OCCULTATION SIGN

Time period covered - 07/10/79 TO 07/10/79
(As verified by NSSDC)

Quantity of data - 20 REELS OF TAPE

These experimenter-supplied, complex envelope occultation signals data are on 9-track, 800-bpi, ASCII magnetic tape created on a Data General Eclipse S/250 computer. The first record on tape contains descriptive text and the values needed to compute event times, frequencies, sampling rates, and bandwidth. The first data record contains 13-cm (S-band) samples, then the next contain 3.6-cm (X-band) samples. The pattern in groups of four records is repeated for the remainder of the tape. The sample in an S-band record coincides with the sample in the X-band record which immediately follows. It should be noted that the first S- and X-band data records on each tape begin with sample values of zero which result from the filtering method and are required for time alignment.

Data set name - JUPITER OCCULTATION, MERGED OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-02B, MERGED OCCULTATION DATA

Time period covered - 03/05/79 TO 07/10/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These experimenter-supplied, merged occultation data are on 9-track, 800-bpi, ASCII magnetic tape created on a Data General Eclipse S/250 computer. The data are blocked with nine 80-byte logical records per physical record. There are two file types, one containing trajectory information and the other radio frequency information. The trajectory file consists of three header records followed by five data records per time tag as follows: number of time points in file; spacecraft no.; ephemeris time (s); approximate one-way light time (s); sun position; and spacecraft and earth position and velocity. The radio frequency file consists of four header records followed by two data records per time tag as follows: number of time points in file; spacecraft no.; receiving station no.; spacecraft oscillator frequency (Hz); year and day of year; seconds past midnight; S-band received and residual frequency (Hz); S-band received power (dB); X-band received and residual frequency (Hz); and X-band received power (dB). All position and velocity vectors are Jupiter-centered in the earth-mean-equator 1950 coordinate system.

Data set name - SATURN RADIO OCCULTATION DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-02C, SATURN RADIO OCCULTATION DATA,TAP

Time period covered - 08/26/81 TO 08/26/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

These Saturn radio occultation data are on 9-track, 1600-bpi, ASCII magnetic tape created on a PRIME computer. The tape contains Saturn entry and exit frequency and amplitude data, and entry and exit trajectory data. Each frequency and amplitude file contains a header with the number of data records in the file; spacecraft ID; entry, exit flag; transmitting and receiving station numbers; communications mode; and frequency bands. The data records contain time in year, day of year, and seconds past midnight; S- and X-band received RF frequency (Hz); and S- and X-band received power (dB). Each trajectory file begins with a header containing number of data records in file; spacecraft ID; entry, exit flag; file ID; transmitting and receiving station numbers; speed of light (km/s); difference between Ephemeris Time and Universal Time (s); and approximate one way light time (s). Each trajectory data record contains spacecraft event ephemeris time (seconds past 1950); occulting body to spacecraft distance and velocity, earth distance and velocity, and sun distance and velocity.

Data set name - SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-02D, SATURN ENCOUNTER DATA ON MAG TAPE

Time period covered - 08/07/81 TO 09/18/81
(As verified by NSSDC)

Quantity of data - 6 REELS OF TAPE

These Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a UNIVAC 1108 computer. Each 1792-word physical block contains a 64-word file identification (ID) record, a 64-word transponder record, and 26 tracking data records. The file ID record identifies the tape and gives the time the tape was created. The transponder record contains the instrument on and off times (in year, day of year, hour, minute, and second of day); the network ID; station number; and transmitter type and frequency. Each tracking data record contains Doppler frequency, range, and tracking station information along with a record time tag and spacecraft, network, and station ID.

Data set name - RADIO OCCULTATION, SATURN ENCOUNTER DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-02E, RADIO OCCULTATION, SATURN ENCOUNT

Time period covered - 08/26/81 TO 08/26/81
(As verified by NSSDC)

Quantity of data - 2 REELS OF TAPE

These experimenter-supplied, radio occultation, Saturn encounter data are on 9-track, 1600-bpi, binary magnetic tape created on a Data General Eclipse S-250 computer. After filtering and decimation, the data from the medium-band system were stored in records 600 complex words (64 bits) long. The first 88 complex words comprise a header consisting of time and day of first sample; number of complex samples per record; sample period (microseconds); decimation radio; first and last frequency in passband (Hz); date and time of processing; tape and file identification (ID); spacecraft and station numbers; real-time recorder and data channel number. Following the header information are 512 complex data values representing the output from the filtering and decimation process.

VOYAGER 2, WARWICK
PLANETARY RADIO ASTRONOMY

Data set name - LOW BAND DYNAMIC SPECTRA PLOTS,JUPITER

NSSDC ID 77-076A-10A, LOW BAND DYN SPECTRA PLOTS,JUP

Time period covered - 08/20/77 TO 12/31/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These plots, microfilmed by NSSDC from hardcopy data supplied by the experimenter, were produced on a 12-inch Versatec electrostatic plotter with 200 dot/inch resolution. The data (ymmd or yymmdd) and the spacecraft (V 1 or V 2) are displayed on the right-hand side of each plot. The plot consists of four panels. The first panel has no identifier, the second is labeled T (total power), the third R (right-hand polarization), and the fourth L (left-hand polarization). The vertical axis for each panel represents the frequency with the first tick mark equal to 0.25 MHz and each tick mark increasing by 0.25 MHz up to 1.25 MHz (the frequency increases in the downward direction). The horizontal axis represents spacecraft event time where each tick is equal to 1 hour. In the lower three panels (T, R, and L) the darkness is proportional to the logarithmic intensity of the signal above a computed background. The lower two panels represent the frame averages of R and L measurements. The sum of these two is shown in the T panel. Their difference gives the polarization sense displayed in the top panel (unlabeled), where white (black)

represents a dominance of right-hand (left-hand) polarization. Supporting documentation with a more thorough data description appears at the beginning of the microfilm reel.

Data set name - HIGH BAND DYNAMIC SPECTRA PLOTS,JUPITER

NSSDC ID 77-076A-10B, HIGH BAND DYN SPECTRA PLOTS,JUP

Time period covered - 05/01/79 TO 08/10/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

These plots, microfilmed by NSSDC from hardcopy data supplied by the experimenter, were produced on a 12-inch Versatec electrostatic plotter with 200 dot/inch resolution. The date (ymmdd or yymmdd) and the spacecraft (V 1 or V 2) are displayed on the right-hand side of each plot. The plot consists of four panels: the first panel has no identifier, the second is labeled T (total power), the third R (right-hand polarization), and the fourth L (left-hand polarization). The vertical axis for each panel represents the frequency with the first tick mark equal to 0.25 MHz and each tick mark increasing by 0.25 MHz up to 1.25 MHz (the frequency increases in the downward direction). The horizontal axis represents spacecraft event time where each tick is equal to 1 hour. In the lower three panels (T, R, and L) the darkness is proportional to the logarithmic intensity of the signal above a computed background. The lower two panels represent the frame averages of R and L measurements. The sum of these two is shown in the T panel. Their difference gives the polarization sense displayed in the top panel (unlabeled), where white (black) represents a dominance of right-hand (left-hand) polarization. Supporting documentation with a more thorough data description appears at the beginning of the microfilm reel.

Data set name - PLANETARY RADIO ASTRONOMY DATA ON
MAGNETIC TAPE

NSSDC ID 77-076A-10C, PLANETARY RADIO ASTRONOMY DATA

Time period covered - 08/20/77 TO 04/30/80
(As verified by NSSDC)

Quantity of data - 4 REELS OF TAPE

These experimenter-supplied, planetary radio astronomy data are on 9-track, 6250-bpi, binary magnetic tape created on an IBM 360 computer. Each 32,484-byte physical block contains forty 812-byte logical records. A data record consists of the date in year, month and day; spacecraft event time in elapsed milliseconds; telemetry mode (cruise mode data rates in frame completion times from 48 s to 2880 s); and the average received power for all 199 frequencies in descending order over the frame (in millibels) for 70 low-frequency and 128 high-frequency channels. There is an extra frequency available in the high band corresponding to 40,550 kHz (although it is usually set to zero).

Data set name - DECAMETRIC EMISSION CATALOG (15-40 MHZ)
DATA ON MAGNETIC TAPE

NSSDC ID 77-076A-10D, DECAMETRIC EMISSION CAT.15-40 MHZ

Time period covered - 06/04/79 TO 07/23/79
(As verified by NSSDC)

Quantity of data - 1 REEL OF TAPE

This data set consists of a list of Jupiter's decametric radio emission (DAM) recorded by the Voyager Planetary Radio Astronomy (PRA) experiment during periods in 1979 adjacent to encounter. The events were read from the Voyager spectral records in the frequency range 15 to 40 MHz. Each event is listed by a day number and the date with the beginning and end times in spacecraft ephemeris time (SCET). The upper and lower frequency limits of the event are given in MHz. The corresponding System III (1965.0) central meridian longitudes and the Io-phase values are given for each event. For further details see C. Barrow, Astronomy and Astrophysics Supplement Series, v. 46, p. 111, 1981.

Data set name - LOW BAND DYNAMIC SPECTRA PLOTS, SATURN

NSSDC ID 77-076A-10E, LOW BAND DYN SPECTRA PLOTS,SAT

Time period covered - 01/01/80 TO 12/31/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm of the low-band dynamic spectra from the Radio Astronomy experiment on Voyager 2. Four shaded spectral plots are displayed on each frame, giving frequency vs spacecraft event time in hours of the day. The top spectrum is for polarization, where white is for right-hand dominance, and black is for left-hand dominance; the T-spectrum is for total power (sum of right and left); the R-spectrum is for right-hand power; and the L-spectrum is for left-hand power. This data set is on the same roll as -10F (high-band).

Data set name - HIGH BAND DYNAMIC SPECTRA PLOTS,SATURN

NSSDC ID 77-076A-10F, HIGH BAND DYN SPECTRA PLOTS,SAT

Time period covered - 01/01/80 TO 12/31/81
(As verified by NSSDC)

Quantity of data - 1 REEL OF MICROFILM

This data set consists of 16-mm microfilm of the high-band dynamic spectra from the Radio Astronomy experiment on Voyager 2. Four shaded spectral plots are displayed in each frame, giving frequency vs spacecraft event time in hours of the day. The top spectrum is for polarization, where white is for right-hand dominance, and black is for left-hand dominance; the T-spectrum is for total power (sum of right and left); the R-spectrum is for right-hand power; and the L-spectrum is for left-hand power. This data set is on the same roll as -10E (low-band).

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			PHOTOS CALIBRATED + CORRECTED 4X5	64-077A-01A	07/14/65	07/14/65	18
			PHOTOS OF MARS,JPL REPORT 32-884	64-077A-01B	07/14/65	07/14/65	19
			TELEVISION PICTURES ON MICROFILM	64-077A-01G	07/14/65	07/14/65	19
		SIMPSON	MARINER 4, COSMIC RAY TELESCOPE	64-077A-04			
			RAW COUNT RATE(CONTAIN OVRFLOW)	64-077A-04A	11/28/64	10/01/65	19
			PHA DATA(MEET JPL HI QUAL.LVL)	64-077A-04B	11/28/64	10/01/65	19
			D(1)RATE(1.4 HR.AVE)+DIS.SUM.	64-077A-04C	11/28/64	10/01/65	19
			D(1)D(2)RATE(4.24 HR.AVE)+D.S.	64-077A-04D	11/28/64	10/01/65	19

SPACECRAFT NAME	LAUNCH DATE	INVESTIGATOR NAME	EXPERIMENT NAME / DATA SET NAME	NSSDC ID	DATA SET INFORMATION: TIME SPAN OF DATA		PAGE
		SMITH	MARINER 4,MAGNETOMETER	64-077A-02			
			INTRPLNTRY. MAG. FIELD-3 H AVGS.	64-077A-02A	11/28/64	10/01/65	20
			INTRPLNTRY.MAG.FIELD-50.4 S AVGS.	64-077A-02B	11/28/64	10/01/65	20
			INTRPLNTRY.MAG.FIELD-2.8 MIN AVGS	64-077A-02C	11/29/64	10/01/65	20
			INTRPLNTRY.MAG.FIELD-4.2 S AVGS.	64-077A-02D	11/29/64	01/03/65	20
			INTRPLNTRY.MAG.FIELD-16.8 S AVGS.	64-077A-02E	01/03/65	10/01/65	20
MARINER 5	06/14/67			67-060A			
		ANDERSON	MARINER 5, CELESTIAL MECHANICS	67-060A-07			
			CELESTIAL MECHANICS MAG.TAPES	67-060A-07A	06/14/67	11/20/67	20
		BRIDGE	MARINER 5, FARADAY CUP	67-060A-03			
			ONE HOUR AVG. PLASMA PARAM. -FILM	67-060A-03A	06/14/67	11/21/67	20
			ONE HOUR AVG PLASMA PARAM.ON TAPE	67-060A-03B	06/14/67	11/21/67	20
			LISTINGS OF COUNTS/FRAME-FINE RES	67-060A-03C	06/14/67	11/21/67	21
			PLASMA PARAM WITH B-FINE TIME TAP	67-060A-03D	06/14/67	11/21/67	21
		ESHLEMAN	MARINER 5, TWO FREQUENCY BEACON	67-060A-02			
			TOTAL ELECT CONTENT,HRLY VAL (CQ)	67-060A-02A	06/14/67	11/21/67	21
			TOTAL ELECT CONTENT,HRLY (MO)	67-060A-02B	06/14/67	11/21/67	21
			CORRECTED ELECTRON DENSITY, TAPE	67-060A-02C	09/01/67	10/26/67	21
		SMITH	MARINER 5,HELIUM MAGNETOMETER	67-060A-05			
			TRIAX. MAGNETIC FIELD ON TAPE	67-060A-05A	06/14/67	11/21/67	21
			TRIAX HR. AVG. MAGNETIC FLD. TAPE	67-060A-05B	06/14/67	11/21/67	21
			B-FIELD AVGS. 1 DAY, 3 HR, 1 HR	67-060A-05C	06/14/67	11/21/67	21
			TRIAX MAG. FLD. VENUS ENCOUNTER	67-060A-05D	10/19/67	10/19/67	22
			B WITH PLASMA PARAM-PLAS SCALE TP	67-060A-05E	06/14/67	11/21/67	22
MARINER 6	02/24/69			69-014A			
		ANDERSON	MARINER 6, CELESTIAL MECHANICS	69-014A-05			
			2 WAY DOPPLER RADIO TRACKING,TAPE	69-014A-05A	03/05/69	09/02/69	22
		BARTH	MARINER 6,UV SPECTROMETER EXPER	69-014A-04			
			UPPER ATMOS. UV SPECTRA, MAG.TAPE	69-014A-04A	07/31/69	07/31/69	22
		KLIORE	MARINER 6,S-BAND OCCULTATION	69-014A-06			
			S-BAND OCCULTATION DATA, MAG TAPE	69-014A-06A	07/00/69	08/00/69	22
		LEIGHTON	MARINER 6,MARS SURFACE TV CAMERA	69-014A-01			
			PHOTOS,RAW ANALOG NEAR ENCOUNTER	69-014A-01A	07/31/69	07/31/69	22
			PHOTOS,RAW ANALOG FAR ENCOUNTER	69-014A-01B	07/29/69	07/30/69	22
			PHOTOS, ENHANCED NEAR ENCOUNTER	69-014A-01C	07/31/69	07/31/69	22
			PHOTOS, ENHANCED FAR ENCOUNTER	69-014A-01D	07/29/69	07/30/69	23
			PHOTOMETRIC DECALIB NEAR ENCOUNTR	69-014A-01E	07/31/69	07/31/69	23
			PHOTOMETRIC DECALIB FAR ENCOUNTER	69-014A-01F	07/29/69	07/30/69	23
			MAX DISCRIM CONTRAST ENHANCED NE	69-014A-01G	07/31/69	07/31/69	23
			MAX DISCRIM CONTRAST ENHANCED FE	69-014A-01H	07/29/69	07/30/69	23
			PHOTOS, B/W MOSAICS NEG 4X5 NE	69-014A-01I	07/31/69	07/31/69	23
			NE ENHANCED TAPES	69-014A-01J	07/31/69	07/31/69	23
			NE PHOTOMETRIC TAPES	69-014A-01K	07/31/69	07/31/69	23
			FE PHOTOMETRIC TAPES	69-014A-01L	07/29/69	07/29/69	24
		NEUGEBAUER	MARINER 6,CHAN IR RADIOMETER	69-014A-03			
			2 CHANNEL IR RADIOMETER DATA	69-014A-03A	07/31/69	07/31/69	24
		PIMENTEL	MARINER 6,IR SPECT 1.5-15 MICRON	69-014A-02			
			IR SPECTROMETER DATA	69-014A-02A	07/31/69	07/31/69	24
MARINER 7	03/27/69			69-030A			
		ANDERSON	MARINER 7,CELESTIAL MECHANICS	69-030A-05			
			2WAY DOPPLER RADIO TRKING ON TAPE	69-030A-05A	04/12/69	09/07/69	24
		BARTH	MARINER 7,UV SPECTROMETER EXPER.	69-030A-04			
			UPPER ATMOS. UV SPECTRA, MAG.TAPE	69-030A-04A	08/05/69	08/05/69	24
		KLIORE	MARINER 7,S-BAND OCCULTATION	69-030A-06			
			S-BAND OCCULTATION DATA, MAG TAPE	69-030A-06A	08/00/69	08/00/69	24
		LEIGHTON	MARINER 7,MARS SURFACE TV CAMERA	69-030A-01			
			PHOTOS,RAW ANALOG NEAR ENCOUNTER	69-030A-01A	08/05/69	08/05/69	25
			PHOTOS,RAW ANALOG FAR ENCOUNTER	69-030A-01B	08/02/69	08/04/69	25
			PHOTOS, ENHANCED NEAR ENCOUNTER	69-030A-01C	08/05/69	08/05/69	25
			PHOTOS, ENHANCED FAR ENCOUNTER	69-030A-01D	08/02/69	08/04/69	25
			PHOTOMETRIC DECALIB NEAR ENCOUNTR	69-030A-01E	08/05/69	08/05/69	25
			PHOTOMETRIC DECALIB FAR ENCOUNTER	69-030A-01F	08/02/69	08/04/69	25
			MAX DIS CONTRAST ENHANCED NE	69-030A-01G	08/05/69	08/05/69	25
			MAX DIS CONTRAST ENHANCED FE	69-030A-01H	08/02/69	08/04/69	25
			PHOTOS, B/W MOSAICS NEG 4X5 NE	69-030A-01I	08/05/69	08/05/69	26
			NE ENHANCED TAPES	69-030A-01J	08/05/69	08/05/69	26
			NE PHOTOMETRIC TAPES	69-030A-01K	08/05/69	08/05/69	26
			FE PHOTOMETRIC TAPES	69-030A-01L	08/02/69	08/04/69	26
			PRESS RELEASE PHOTOGRAPHS 4X5	69-030A-01M	08/02/69	08/04/69	26
		NEUGEBAUER	MARINER 7,2 CHAN IR RADIOMETER	69-030A-03			
			2 CHANNEL IR RADIOMETER DATA	69-030A-03A	08/05/69	08/05/69	26
		PIMENTEL	MARINER 7,IR SPECT 1.5-15 MICRON	69-030A-02			
			IR SPECTROMETER DATA	69-030A-02A	08/05/69	08/05/69	26
MARINER 9	05/30/71			71-051A			
			PRELIMINARY TRAJ. CHART	71-051A-00D	05/30/71	11/30/73	26
			MARINER 9 ORBIT DATA TAPES	71-051A-00E	05/30/71	10/25/72	27
		BARTH	MARINER 9,UV SPECTROMETER	71-051A-02			
			LOWER ATMOSPHERE DATA ON FICHE	71-051A-02A	11/27/71	01/21/72	27
			UPPER ATMOSPHERE-AIRGLOW, FICHE	71-051A-02B	11/14/71	02/08/72	27
			1216, 1304 A LIMB/DISC DATA,FICHE	71-051A-02C	11/12/71	12/06/71	27
			STELLAR DATA ON MICROFICHE	71-051A-02D	11/14/71	01/16/72	28
			LOCAL TOPOGRAPHY-ATLAS	71-051A-02E	01/22/72	02/26/72	28
			PRESSURE ALTITUDE MEASUREMENTS	71-051A-02F	01/23/72	03/01/72	28
		HANEL	MARINER 9,INFRA INTERF SPECT	71-051A-03			
			MARINER 9 IR INTER. SPECT. (IRIS)	71-051A-03A	11/14/71	10/16/72	28
		KLIORE	MARINER 9,S-BAND OCCULTATION	71-051A-08			
			OCCULTATION DATA,PLOT+TABLES,FILM	71-051A-08A	11/14/71	10/26/72	28
		MASURSKY	MARINER 9, TELEVISION PHOTOGRAPHY	71-051A-04			
			PHOTOS, MTVS RAW	71-051A-04A	11/13/71	10/27/72	28
			PHOTOS,MTVS ALBEDO	71-051A-04B	11/13/71	10/27/72	29
			PHOTOS,MTVS MAX DISCRIMINATION	71-051A-04C	11/13/71	10/27/72	29
			IPL ORTHOGRAPHIC CONTRAST ENHANCE	71-051A-04D	11/13/71	10/27/72	29
			IPL ORTHOGRPHIC MAX DISCRIM.	71-051A-04E	11/13/71	10/27/72	29
			MTVS PHOTOS W/SUP DATA, ON MFICHE	71-051A-04F	11/13/71	10/27/72	29
			BLACK & WHITE PANORAMIC MOSAICS	71-051A-04G	11/14/71	10/27/72	29
			SEDR SUPPORT DATA 16-MM M/FILM	71-051A-04H	11/14/71	10/27/72	29

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			TELEVISION INDICES 16-MM M/FILM	71-051A-04I	11/14/71	10/27/72	30
			IPL/RDR MICROFICHE CATALOG	71-051A-04J	11/14/71	08/06/72	30
			SEDR FINAL DATA TAPE	71-051A-04K	11/12/71	10/18/72	30
			CATALOG OF MTVS PHOTOS ON MFILM	71-051A-04L	11/09/71	10/27/72	30
			BLACK & WHITE PRESS RELEASE PHOTO	71-051A-04M	11/10/71	08/06/72	30
			MOSAIC CATALOG + INDEX ON MFILM	71-051A-04N	11/13/71	10/27/72	30
			LIMB INDEX W/SUPPORT DATA, MFICHE	71-051A-04O	11/13/71	10/27/72	30
			LIMB MICROFICHE CATALOG	71-051A-04P	11/13/71	10/27/72	30
			CAL TECH SELECTD MTVS+IPL PHOTOS	71-051A-04Q	11/13/71	10/27/72	30
			USGS SEMICONTROLLED MOSAICS	71-051A-04R	N/A		31
			SHADED RELIEF MAPS	71-051A-04S	01/01/72	10/28/72	31
			PICTURE + ENHANCEMENT DATA TAPE	71-051A-04T	10/09/71	10/17/72	31
			JPL MOSAIC CATALOG + INDEX MFICHE	71-051A-04U	11/10/71	10/27/72	31
			RDR PRODUCTS (STATUS)	71-051A-04V	11/09/71	10/27/72	31
			IPL ENHANCEMENT CATALOG	71-051A-04W	11/09/71	10/27/72	31
			MARS GLOBE PHOTOMOSAICS	71-051A-04X	01/01/72	10/27/72	31
			MARS GLOBE PHOTOMOSAIC INDEX	71-051A-04Y	N/A		31
			INDEX OF IMAGES BY 10 DEGREE BOX	71-051A-04Z	N/A		31
			IMAGING DATA ON MAGNETIC TAPE	71-051A-04a	11/14/71	10/22/72	32
		NEUGEBAUER	MARINER 9,INFRARED RAD.	71-051A-01			
			10 AND 20MICRON BRIGHT TEMP-MTAPE	71-051A-01A	11/14/71	03/27/72	32
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		BRIDGE	MARINER 10,SCAN.ELCTOSTAT ANALYZR	73-085A-03			
			MVM PLASMA DETAIL TAPE	73-085A-03A	03/28/74	03/16/75	32
		BROADFOOT	MARINER 10, EUV SPECTROSCOPY	73-085A-05			
			INTERPLANETARY EMIS H-HE, ON TAPE	73-085A-05A	11/06/73	01/28/74	32
		CHASE, JR.	MARINER 10, IR RADIOMETRY	73-085A-06			
			IR RAD. DATA OF MERCURY ON TAPE	73-085A-06A	03/29/74	03/29/74	32
			IR RADIOMETRIC DATA OF VENUS	73-085A-06B	02/05/74	02/05/74	32
			IR RADIOMETRIC DATA OF MERCURY	73-085A-06C	03/29/74	03/29/74	32
		HOWARD	MARINER 10, RADIO SCIENCE	73-085A-02			
			VENUS OCCULT-FINAL PLTS/LSTS MFLM	73-085A-02A	12/04/73	02/05/74	33
			RED TELE SIGNAL DATA, VENUS OCCLT	73-085A-02B	02/05/74	02/05/74	33
			VENUS OCCULTATION, INTERMED. DATA	73-085A-02C	N/A		33
			MERC.OCCULT - RED.TM SIGNALS,TAPE	73-085A-02D	03/29/74	03/29/74	33
		MURRAY	MARINER 10,TELE. PHOTO.	73-085A-01			
			EARTH/MOON CALIBRATION SEQ 70-MM	73-085A-01A	11/03/73	09/23/74	33
			EARTH/MOON CALIBRATION SEQ, FICHE	73-085A-01B	11/03/73	09/23/74	33
			VENUS ENCOUNTER PHOTOS, 70-MM	73-085A-01C	02/05/74	02/10/74	34
			MERCURY 1ST ENCOUNTER 70-MM	73-085A-01D	03/29/74	04/02/74	34
			PR PHOTOS OF MERC AND VENUS	73-085A-01E	02/04/74	04/03/74	34
			MERCURY 2ND ENCOUNTER 70-MM	73-085A-01F	09/23/74	09/23/74	34
			VENUS ENCOUNTER MICROFICHE	73-085A-01G	02/05/74	02/05/74	34
			MERCURY 1ST ENCOUNTER MICROFICHE	73-085A-01H	03/29/74	03/29/74	34
			MERCURY 2ND ENCOUNTER MICROFICHE	73-085A-01I	09/21/74	09/21/74	35
			INDEXES OF DATA	73-085A-01J	02/05/74	09/21/74	35
			MERCURY 3RD ENCOUNTER 70-MM	73-085A-01K	03/12/75	03/17/75	35
			MTCF SEDR SUPPORTING DATA M/FILM	73-085A-01L	11/03/73	09/23/74	35
			IPL SEDR SUPPORTING DATA, M/FILM	73-085A-01M	11/03/73	09/24/74	35
			MERCURY ENCOUNTERS IPL/RDR 70-MM	73-085A-01N	N/A		35
			IPL MERCURY STEREO 70-MM	73-085A-01O	03/29/74	09/26/74	35
			SEDR SUBSET SUP. DATA FOR ALL PHO	73-085A-01P	11/03/73	09/23/74	35
			MERCURY IPL CALTECH MICROFICHE	73-085A-01Q	03/16/74	09/21/74	36
			MERCURY 3RD ENCOUNTER MICROFICHE	73-085A-01R	03/16/75	03/16/75	36
			PHOTOGRAPHY FROM ATLAS OF MERCURY	73-085A-01S	N/A		36
			IMAGING DATA ON MAGNETIC TAPE	73-085A-01T	11/03/73	03/16/75	36
		NESS	MARINER 10, FLUXGATE MAGNETOMETER	73-085A-04			
			1.2 SEC PLOTS, SEQ COORDS, MFILM	73-085A-04A	11/03/73	04/14/74	36
			HR AVG INPL MAG VECTOR PLOTS	73-085A-04B	11/03/73	04/11/74	36
			HR AVG INPL MAG VECTORS ON TAPE	73-085A-04C	11/03/73	04/15/74	36
			42 SEC DATA, SEQ COORDS, TAPE	73-085A-04D	11/03/73	04/09/74	36
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			6-SEC NEAR-VENUS FIELD PLOTS	73-085A-04G	02/04/74	02/05/74	37
			1.2 SEC PLOTS, VENUS COORDS, MFLM	73-085A-04H	01/20/74	02/05/74	37
			1.2 SEC PLOTS, MERC. COORDS, MFLM	73-085A-04I	03/25/74	03/30/74	37
			6 SEC LISTS, VENUS COORDS, MFILM	73-085A-04J	01/19/74	02/05/74	37
			6 SEC LISTS, MERC. COORDS, MFILM	73-085A-04K	03/25/74	03/30/74	37
			1.2 SEC PLOTS, GSE COORDS, MFILM	73-085A-04L	11/03/73	11/06/73	37
			6 SEC LISTS, GSE COORDS, MFILM	73-085A-04M	11/03/73	11/06/73	38
			MVM PLASMA DETAIL TAPE	73-085A-04N	03/28/74	03/16/75	38
			MAG FLD+TRAJ DATA PLOTS+LISTINGS	73-085A-04O	03/29/74	03/16/75	38
			HRLY-AVG FLD-STND IMF/SOLAR WIND	73-085A-04P	11/03/73	09/18/74	38
			1 HOUR AVERAGED PLOTS	73-085A-04Q	11/03/73	09/18/74	38
			1.2,6,&42 SEC MERCURY ENCTR TAPE	73-085A-04R	03/26/74	03/31/74	38
		SIMPSON	MARINER 10, ENERGETIC PARTICLES	73-085A-07			
			PULSE HEIGHT DATA ON TAPE	73-085A-07A	11/03/73	03/21/75	38
			RATE DATA ON TAPE	73-085A-07B	11/03/73	09/23/74	39
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		GREENSTADT	PIONEER 5, SEARCH COIL MAG	60-001A-02			
			TABLES AND GRAPHS OF T, MAG AMP	60-001A-02A	03/11/60	05/06/60	39
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		SIMPSON	PIONEER 5,TRIP COINC PROP COUNTER	60-001A-01			
			PLOTS TRIP.+SINGLE DATA VS TIME	60-001A-01A	03/11/60	05/10/60	39
			DIGITAL TRIP.+SINGLE DATA(TIME)	60-001A-01B	03/11/60	05/16/60	39
		WINCKLER	PION 5,ION CH+GM(E/1.55,2.86 P)	60-001A-03			
			TABULATIONS RATES VS T MFLM	60-001A-03A	03/11/60	04/29/60	39
			COMPUT LSTNG RATES VS T MFLM	60-001A-03D	03/11/60	05/17/60	40
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			EPHEMERIS, ORBIT PLOT	65-105A-00D	12/16/65	03/11/70	40
			EPHEMERIS TAPES	65-105A-00E	12/16/65	05/16/72	40
			COMPRESSED EPHEMERIS TAPES	65-105A-00F	12/16/65	05/16/72	40
			CORDTATION DELAY TIME LISTINGS	65-105A-00G	12/01/65	05/01/72	40
		ANDERSON	PIONEER 6,CELESTIAL MECHANICS	65-105A-07			
			CELESTIAL MECHANICS MAG. TAPES	65-105A-07A	12/18/65	09/24/67	41

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			PLOTS OF VEL, DEN, TEMP, VS TIME	65-105A-02A	12/18/65	04/03/69	41
			MIT PLASMA PARAM 1 HR AV GEOPHYSB	65-105A-02B	03/01/69	02/28/70	41
			NSSDC PLASMA PUBLICATION-MIT DATA	65-105A-02C	12/16/65	05/18/71	41
			HOUR AVG PLASMA PARAMETERS ON TP	65-105A-02D	12/16/65	05/09/71	41
		ESHLEMAN	PIONEER 6,TWO FREQUENCY RECEIVER	65-105A-04			
			TOTAL ELECT CONTENT,HRLY VAL (DD)	65-105A-04A	12/16/65	07/11/66	41
			TOTAL ELECT CONTENT,HRLY VAL(MO)	65-105A-04B	12/16/65	07/11/66	41
			CORRECTED ELECT DENSITY,TAPE	65-105A-04D	01/09/66	05/25/66	41
			CORRECTED ELECT DENS. PLOTS, 35MM	65-105A-04E	01/10/66	06/01/66	42
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			SUPERIOR CONJ.FARADAY ROTATION	65-105A-08A	10/12/66	11/24/66	42
		MCCRACKEN	PIONEER 6,COSMIC RAY DETECTOR	65-105A-05			
			HOURLY COUNT RATES, MFILM LISTING	65-105A-05A	12/16/65	02/06/67	42
			HOURLY COUNT RATES, MFILM PLOTS	65-105A-05B	12/16/65	01/25/67	42
		NESS	PIONEER 6,SINGLE AXIS MAGNETOMETE	65-105A-01			
			30 SEC VR MAGNETIC FIELD AVG,TAPE	65-105A-01A	01/26/66	07/26/66	42
			HOURLY AVGD VR MAG FIELD, MFILM	65-105A-01B	12/17/65	09/05/67	42
			HR AVG PION-6 + 7 VECTORS ON TAPE	65-105A-01C	12/15/65	09/15/67	42
		SIMPSON	PIONEER 6,COSMIC RAY TELESCOPE	65-105A-03			
			COUNT RATE + PULSE HEIGHT DATA	65-105A-03A	12/16/65	12/30/70	43
			COUNT RATE PLOTS,27 DAY EACH	65-105A-03D	12/16/65	12/26/68	43
		WOLFE	PIONEER 6, ELECTROSTATIC ANALYZER	65-105A-06			
			PLOTS OF PLASMA PARAMETERS	65-105A-06A	12/16/65	03/18/74	43
			SOLAR GEOPHYS DATA PBLSD SOLAR WD	65-105A-06B	12/16/65	05/05/75	43
			HR AVG PLASMA PARAM ON MAG TAPE	65-105A-06C	12/18/65	03/04/66	43
			HOURLY AVERGD PLASMA PARAM - MFLM	65-105A-06D	12/18/65	03/04/66	43
PIONEER	7	08/17/66		66-075A			
			EPHEMERIS, ORBIT PLOTS	66-075A-00D	08/17/66	07/09/71	43
			EPHEMERIS TAPES	66-075A-00E	08/17/66	01/02/72	43
			COMPRESSED EPHEMERIS TAPES	66-075A-00F	08/17/66	01/02/72	44
			COROTATION DELAY TIME LISTINGS	66-075A-00G	08/01/66	01/00/72	44
		BRIDGE	PIONEER 7,FARADAY CUP	66-075A-02			
			PLOTS OF VEL, DEN, TEMP, VS TIME	66-075A-02A	08/18/66	12/02/68	44
			MIT PLASMA PARAM / HR AV GEOPHYSB	66-075A-02B	06/02/69	10/31/69	44
			NSSDC PLASMA PUB-MIT DATA MFICHE	66-075A-02C	08/18/66	12/02/68	44
			HOUR AVG PLASMA PARAMETERS ON TP	66-075A-02D	08/19/66	11/29/68	45
			MAGNETOTAIL HIGH RES FLUXES-LIST	66-075A-02E	09/19/66	09/30/66	45
		ESHLEMAN	PIONEER 7, TWO FREQUENCY BEACON	66-075A-04			
			TOTAL ELECT CONTENT, HRLY VAL(DD)	66-075A-04A	08/18/66	11/29/67	45
			TOTAL ELECT CONTENT,HRLY VAL (MO)	66-075A-04B	08/18/66	11/29/67	45
			CORRECTED ELECT DENSITY, TAPE	66-075A-04D	08/17/66	10/26/67	45
			CORRECTED ELECT DENS. PLOTS, 35MM	66-075A-04E	09/12/66	05/20/69	45
		LEVY	PIONEER 7,SUPERIOR CONJ FARADAY	66-075A-08			
			SUPERIOR CONJUNCTION FARADAY ROT	66-075A-08A	06/13/67	07/19/67	45
		MCCRACKEN	PIONEER 7,COSMIC RAY ANISOTROPY	66-075A-05			
			HOURLY COUNT RATES, MFILM LISTING	66-075A-05A	08/18/66	01/31/67	45
			HOURLY COUNT RATES, MFILM PLOTS	66-075A-05B	08/17/66	01/28/67	46
		NESS	PIONEER 7,SINGLE AXIS MAGNETOMETR	66-075A-01			
			30 SEC VR MAGNETIC FIELD AVG,TAPE	66-075A-01A	08/17/66	02/25/67	46
			HOURLY AVGD VR MAG FIELD, MFILM	66-075A-01B	08/17/66	10/29/67	46
			HR AVG PION 6 + 7 VECTORS ON TAPE	66-075A-01C	08/17/66	10/27/67	46
		SIMPSON	PIONEER 7,COSMIC RAY TELESCOPE	66-075A-06			
			COUNT RATE + PULSE HEIGHT DATA	66-075A-06A	08/17/66	12/29/67	46
			COUNT RATE PLOTS,27 DAYS EACH	66-075A-06D	08/17/66	12/27/68	46
			SGD PBLSHD CR PROTON COUNT RATES	66-075A-06E	03/07/69	08/07/71	46
		WOLFE	PIONEER 7, ELECTROSTATIC ANALYZER	66-075A-03			
			PLOTS OF PLASMA PARAMETERS	66-075A-03A	08/17/66	02/09/69	47
			SOLAR GEOPHYS DATA PBLSD SOLAR WD	66-075A-03B	05/21/75	05/21/75	47
			HR AVG PLASMA PARAM ON MAG TAPE	66-075A-03C	08/19/66	11/28/66	47
			HOURLY AVERGD PLASMA PARAM - MFLM	66-075A-03D	08/19/66	11/28/66	47
PIONEER	8	12/13/67		67-123A			
			EPHEMERIS TAPES	67-123A-00D	12/13/67	11/15/71	47
			COMPRESSED EPHEMERIS TAPES	67-123A-00E	12/13/67	11/15/71	47
			COROTATION DELAY TIME LISTINGS	67-123A-00F	12/13/67	11/01/71	48
		ESHLEMAN	PIONEER 8,TWO FREQUENCY BEACON	67-123A-03			
			TOTAL ELECT CONTENT, HRLY VAL(DD)	67-123A-03A	12/14/67	08/25/69	48
			TOTAL ELECT CONTENT,HRLY VAL (MO)	67-123A-03B	12/14/67	08/25/69	48
			CORRECTED ELECT DENSITY, TAPE	67-123A-03C	12/19/67	03/07/71	48
			CORRECTED ELECT DENS. PLOTS, 35MM	67-123A-03D	02/20/68	08/30/70	48
		MCCRACKEN	PIONEER 8,COSMIC RAY ANISOTROPY	67-123A-05			
			7 MIN AND 1 HR COUNT RATES, TAPES	67-123A-05A	12/13/67	03/31/69	48
			7 MIN AND 1 HR COUNT RATES, FILM	67-123A-05B	03/21/69	12/31/70	49
		NESS	PIONEER 8,SINGLE AXIS MAGNETOMET	67-123A-01			
			HOURLY AVERAGED VECTORS, PLOTS	67-123A-01A	12/23/67	12/07/68	49
			30-SEC VR MAG FIELD AVGS ON TAPE	67-123A-01B	12/13/67	12/03/68	49
			HOURLY AVERAGED VECTORS, MAG TAPE	67-123A-01C	12/17/67	12/30/69	49
		SCARF	PIONEER 8,ELECTRIC FIELD DETECTOR	67-123A-07			
			FINE TIME SCALE E-FIELD SPECTRUM	67-123A-07A	12/13/67	10/07/68	49
			SUMMARY PLOTS, ELECT FLD. DET.	67-123A-07B	12/13/67	09/23/68	49
		WEHBER	PIONEER 8,COSMIC RAY GRADIENT DET	67-123A-06			
			20MIN AVG TELESCOPE RATE PLOTS	67-123A-06A	12/13/67	04/10/68	49
			8 HR AVG TELESCOPE RATE PLOTS	67-123A-06B	12/13/67	04/21/68	49
			SGD PBLSHD PROTON COUNT RATES	67-123A-06C	12/01/69	05/28/75	50
			DAILY AVG RATE, MFILM LISTING	67-123A-06D	12/13/67	11/05/71	50
			DAILY AVGD RATES,MFILM PLOTS	67-123A-06E	12/13/67	11/06/71	50
		WOLFE	PIONEER 8,ELECTROSTATIC ANALYZER	67-123A-02			
			PLASMA PARAMETERS	67-123A-02A	12/14/67	01/05/74	50
PIONEER	9	11/08/68		68-100A			
			EPHEMERIS TAPES	68-100A-00D	11/08/68	04/16/72	50
			COMPRESSED EPHEMERIS TAPES	68-100A-00E	11/08/68	04/16/72	50
			COROTATION DELAY TIME LISTINGS	68-100A-00F	11/00/68	04/01/72	51
			PRELIMINARY TRAJ. CHARTS	68-100A-00G	11/08/68		51
		ESHLEMAN	PIONEER 9,TWO FREQUENCY BEACON	68-100A-03			
			TOTAL ELECT CONTENT, HRLY VAL(DD)	68-100A-03A	11/08/68	07/16/69	51
			TOTAL ELECT CONTENT,HRLY VAL (MO)	68-100A-03B	11/09/68	07/16/69	51

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			CORRECTED ELECT DENSITY, TAPE	68-100A-03C	11/11/68	03/07/71	51
			CORRECTED ELECT DENS. PLOTS, 35MM	68-100A-03D	04/04/69	08/27/70	51
			PUBLISHED BEACON SCINT OBS	68-100A-03E	12/00/68	00/00/73	52
			BEACON SCINTILLATION OBS ON TAPE	68-100A-03F	12/00/68	00/00/73	52
		MCCRACKEN	PIONEER 9, COSMIC RAY ANISOTROPY	68-100A-05			
			PRTCL COUNT RATES MFILM LISTINGS	68-100A-05A	11/08/68	09/25/70	52
		SCARF	PIONEER 9,ELECTRIC FIELD DETECTOR	68-100A-07			
			E-FLD HR AVG BROAD BAND,400HZ,AP	68-100A-07A	11/08/68	02/27/69	52
			FINE TIME SCALE E-FIELD SPECTRUM	68-100A-07B	11/09/68	09/07/69	52
			E-FIELD SUMMARY PLOTS ON M/FILM	68-100A-07C	12/03/68	09/06/69	52
			E-FIELD (100,400,3.E4 HZ) ON TAPE	68-100A-07D	11/08/68	07/03/69	52
		SONETT	PIONEER 9,3-AXIS FLUXGATE MAGNETO	68-100A-01			
			30 SEC AVG MAG FIELD VRS ON MFILM	68-100A-01A	11/08/68	06/13/69	52
		WEBBER	PIONEER 9,COSMIC-RAY GRADIENT	68-100A-06			
			SGD PBLSHD PROTON COUNT RATES	68-100A-06A	12/01/69	08/18/74	53
			PION 9,DAILY AVG RATE M/F LISTING	68-100A-06B	11/08/68	09/04/71	53
			DAILY AVGD RATES,MFILM PLOTS	68-100A-06C	11/08/68	09/04/71	53
		WOLFE	PIONEER 9,SOLAR PLASMA DETECTOR	68-100A-02			
			PLASMA PARAMETERS	68-100A-02A	11/08/68	08/18/74	53
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			PRELIMINARY TRAJ. CHART	72-012A-00D	03/03/72	05/00/74	53
		ANDERSON	PIONEER 10,CELESTIAL MECHANICS	72-012A-09			
			DOPPLER TRACKING DATA ON MAG TAPE	72-012A-09A	10/05/73	12/28/73	53
			DOPPLER TRKING / SOLAR OPPOSITION	72-012A-09B	11/13/81	12/09/81	53
		BARNES	PIONEER 10,2 QUAD'SPHERE ANALYZRS	72-012A-13			
			PLOTS OF BULK SPEED VS TIME-FILM	72-012A-13A	04/18/72	12/12/73	53
			SOLAR WIND PROTON BULK SPEED DATA	72-012A-13B	04/18/72	12/31/79	54
			FULL HISTORY, SOLAR WIND PROTONS	72-012A-13C	04/18/72	06/25/83	54
			HR AVG SOLAR WIND PROTONS+MOMENTS	72-012A-13D	04/18/72	06/25/83	54
			DAILY AVG SOL WIND PROTON+MOMENTS	72-012A-13E	04/18/72	06/25/83	54
			FULL HISTORY SOL WIND PROT PLOTS	72-012A-13F	04/18/72	06/25/83	54
			54 DAY S W PROTON T,N,V PLOTS	72-012A-13G	04/18/72	06/25/83	54
			LIST DAY AVG S W PROTON+MOMENTS	72-012A-13H	04/18/72	06/25/83	54
		FILLIUS	PIONEER 10,JOVIAN TRAPPED PARTICL	72-012A-05			
			ENCOUNTER DATA SUMMARY TAPES	72-012A-05A	11/25/73	12/19/73	54
			ENCOUNTER DATA ANALYSIS TAPE	72-012A-05B	12/04/73	12/05/73	55
			INTERPLANETARY DATA SUMMARY TAPES	72-012A-05C	03/03/72	05/30/77	55
			INHOMOGENEOUS DAILY SUM INTERPLNT	72-012A-05D	03/03/72	12/31/80	55
			INTERPLANETARY DATA PLOTS,MFILM	72-012A-05E	01/01/72	02/09/82	55
			24-HOUR COMPRESSED SUMMARY DATA	72-012A-05F	02/01/72	12/31/83	55
		GEHRELS	PIONEER 10, IMAGE PHOTOPOLARIMTR	72-012A-07			
			COLOR PRESS RELEASE PHOTOGRAPHY	72-012A-07A	11/01/73	12/15/73	55
			POLARIZATION DATA ON MICROFICHE	72-012A-07B	04/26/72	07/20/75	55
			BLACK AND WHITE PHOTOGRAPHY	72-012A-07C	12/02/73	12/05/73	55
			B/W 8X10 PHOTOGRAPHY	72-012A-07D	12/02/73	12/05/73	55
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			POLARIZATION DATA ON TAPE	72-012A-07F	04/26/72	07/20/75	56
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			COLOR PHOTOGRAPHY	72-012A-07H	12/01/73	12/05/73	56
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		JUDGE	PIONEER 10,UV PHOTOMETER,200-800A	72-012A-06			
			EUV EDR PHOTON EMISSION DATA	72-012A-06A	03/11/72	05/30/81	56
			USC ULTRAVIOLET DATA PLOTS	72-012A-06B	03/30/72	09/25/80	57
		KINARD	PIONEER 10,METEOROID DETECTOR	72-012A-04			
			METEOROID ENVIRONMENT DATA/JUP	72-012A-04A	N/A		57
		KLIORE	PIONEER 10, S-BAND OCCULTATION	72-012A-10			
			JUP.OCCULT - FINAL PLTS/LSTS MFLM	72-012A-10A	12/04/73	12/04/73	57
			IO OCCULT - FINAL PLTS/LISTS MFLM	72-012A-10B	12/04/73	12/04/73	57
			IO OCCULT -- INTERMED.DATA, TAPE	72-012A-10C	12/04/73	12/04/73	57
			IO OCCULT -- RED.TM SIGNALS, TAPE	72-012A-10D	12/04/73	12/04/73	57
			JUP.OCCULT -- INTERMED.DATA, TAPE	72-012A-10E	12/04/73	12/04/73	57
			JUP.OCCULT - RED.TM SIGNALS, TAPE	72-012A-10F	12/04/73	12/04/73	57
		MCDONALD	PIONEER 10,CHARGED PARTICLE TELE.	72-012A-12			
			15-MIN AVERAGED JUPITER ENCOUNTER	72-012A-12A	11/26/73	12/15/73	58
			6-HR AVERAGED INTERPLANETARY DATA	72-012A-12B	03/06/72	12/31/85	58
		SIMPSON	PIONEER 10,CHARGED PARTICLE COMP	72-012A-02			
			SOLROT COUNT RATE PLOTS, MFILM	72-012A-02A	03/03/72	01/14/74	58
			PULSE HEIGHT ANALYSIS DATA, TAPES	72-012A-02B	03/03/72	12/31/80	58
			5-MIN AVG. COUNT RATE TAPES	72-012A-02C	03/03/72	12/31/80	58
		SMITH	PIONEER 10,3-AXIS HELIUM MAGNETOM	72-012A-01			
			ENCOUNTER 1 MIN AV DATA PLOTS,FLM	72-012A-01D	11/25/73	12/15/73	58
			1 MIN, HOURLY, DAILY AVG. CRUISE	72-012A-01E	02/27/72	11/17/75	58
			1 MIN AVGD VR MAG FIELD DATA,FILM	72-012A-01F	09/03/72	09/30/72	58
			JUPITER ENC.TRAJ.INSIDE 7RJ JG CO	72-012A-01G	12/03/73	12/04/73	59
		SOBERMAN	PIONEER 10,ASTEROID ASTRONOMY	72-012A-03			
			ASTEROID/METEOROID/SKY EMISSIONS	72-012A-03A	03/09/72	01/07/76	59
			DATA ANALYSIS, FINAL REPORT	72-012A-03B	N/A		59
		VAN ALLEN	PIONEER 10,JOVIAN CHARGED PARTICL	72-012A-11			
			PION-10 JUPITER ENCOUNTER TAPES	72-012A-11A	11/25/73	12/18/73	59
			ONE HOUR CRUISE AVERAGES	72-012A-11B	03/04/72	05/16/82	59
		WEINBERG	PIONEER 10,ZODIACAL LIGHT PHOTOM.	72-012A-14			
			BACKGROUND SKY TAPES	72-012A-14A	05/17/72	10/06/73	59
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			PRELIMINARY TRAJECTORY CHART	73-019A-00D	02/27/72	05/00/74	60
		ACUNA	PIONEER 11, FLUXGATE MAGNETOMETER	73-019A-14			
			JOV. ENCOUNTER 5 MIN AVGS, TAPE	73-019A-14A	12/02/74	12/03/74	60
			SATURN ENCOUNTER 5 MIN AVG DATA	73-019A-14B	09/01/79	09/01/79	60
		ANDERSON	PIONEER 11, CELESTIAL MECHANICS	73-019A-09			
			DOPPLER TRACKING (JUPITER ENCNTR)	73-019A-09A	04/17/74	12/25/74	60
			DOPPLER TRACKING DATA SATURN ENCO	73-019A-09B	08/01/79	09/18/79	60
		BARNES	PIONEER 11,2 QUAD'SPHERE ANALYZRS	73-019A-13			
			SOLAR WIND PROTON BULK SPEED DATA	73-019A-13A	04/21/73	12/31/79	60
			FULL HISTORY, SOLAR WIND PROTONS	73-019A-13B	04/21/73	12/06/81	60
			HR AVG SOLAR WIND PROTONS+MOMENTS	73-019A-13C	04/21/73	12/06/81	61
			DAILY AVG SOL WIND PROTON+MOMENTS	73-019A-13D	04/21/73	12/06/81	61
			FULL HISTORY SOL WIND PROT PLOTS	73-019A-13E	04/21/73	12/06/81	61

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			54-DAY S W PROTON T,N,V PLOTS	73-019A-13F	04/21/73	12/06/81	61
			LIST DAY AVG S W PROTON+MOMENTS	73-019A-13G	04/21/73	12/06/81	61
		FILLIUS	PIONEER 11,JOVIAN TRAPPED PARTICL	73-019A-05			
			ENCOUNTER DATA SUMMARY TAPES	73-019A-05A	11/25/74	12/09/74	61
			ENCOUNTER BINARY REDUCTION TAPES	73-019A-05B	12/02/74	12/03/74	61
			INTERPLANETARY DATA SUMMARY TAPES	73-019A-05C	04/16/73	05/31/77	61
			SATURN ENCTR BINARY REDUCTION TPS	73-019A-05D	08/30/79	09/04/79	62
			INHOMOGENEOUS DAILY SUM INTERPLNT	73-019A-05E	04/16/73	12/31/80	62
			INTERPLANETARY DATA PLOTS,MFILM	73-019A-05F	04/16/73	02/09/82	62
			24-HOUR COMPRESSED SUMMARY DATA	73-019A-05G	02/01/73	12/31/83	62
		GEHRELS	PIONEER 11, IMAGE PHOTOPOLARIMTR	73-019A-07			
			COLOR PRESS RELEASE PHOTOGRAPHY	73-019A-07A	11/24/74	12/04/74	62
			POLARIZATION DATA ON MICROFICHE	73-019A-07B	05/30/73	09/05/79	62
			BLACK & WHITE POLARIMETER IMAGERY	73-019A-07C	11/30/74	12/04/74	62
			B/W 8X10 PHOTOGRAPHY	73-019A-07D	11/30/74	12/04/74	62
			INDEXES OF DATA	73-019A-07E	11/23/74	12/06/74	63
			POLARIZATION DATA ON TAPE	73-019A-07F	05/31/73	10/29/76	63
			JUPITER IMAGE LOG ON MICROFICHE	73-019A-07G	11/23/74	12/09/74	63
			JUPITER COLOR IMAGERY	73-019A-07H	11/29/74	12/06/74	63
			SATURN ENCOUNTER	73-019A-07J	08/23/79	09/05/79	63
			SATURN ENCOUNTER DATA ON MAG TAPE	73-019A-07K	08/25/79	09/05/79	63
			INDEX OF JUPITER IMAGES	73-019A-07L	N/A		63
			INDEX OF SATURN IMAGES	73-019A-07M	N/A		64
		JUDGE	PIONEER 11,UV PHOTOMETER,200-800A	73-019A-06			
			EUV EDR PHOTON EMISSION DATA	73-019A-06A	04/06/73	05/23/81	64
			USC ULTRAVIOLET DATA PLOTS	73-019A-06B	04/30/73	09/30/80	64
		KINARD	PIONEER 11, METEOROID DETECTOR	73-019A-04			
			METEOROID ENVIRONMENT DATA/JUP	73-019A-04A	N/A		64
			METEOROID EXP RESULTS AT SATURN	73-019A-04B	N/A		64
		KLIORE	PIONEER 11, S-BAND OCCULTATION	73-019A-10			
			JUP.OCCULT - FINAL PLTS/LSTS MFLM	73-019A-10A	12/03/74	12/03/74	64
			JUP.OCCULT -- INTERMED.DATA, TAPE	73-019A-10B	12/03/74	12/03/74	65
			JUP.OCCULT -- RED.TM SIGNALS,TAPE	73-019A-10C	12/03/74	12/03/74	65
		CDONALD	PIONEER 11,CHARGED PARTICLE TELE.	73-019A-12			
			15-MIN AVERAGED JUPITER ENCOUNTER	73-019A-12A	11/26/74	12/09/74	65
			15-MIN AVERAGED SATURN ENCOUNTER	73-019A-12B	08/31/79	09/04/79	65
			6-HR AVERAGED INTERPLANETARY DATA	73-019A-12C	04/08/73	12/31/85	65
		SIMPSON	PIONEER 11,CHARGED PARTICLE COMP	73-019A-02			
			15-MIN PULSE HEIGHT TAPES	73-019A-02A	04/07/73	12/31/80	65
			5-MIN SECTORED COUNT-RATE TAPES	73-019A-02B	04/07/73	12/31/80	65
			SOL.ROT.COUNT RATE PLOTS, MFILM	73-019A-02C	04/06/73	01/14/74	65
		SMITH	PIONEER 11,3 AXIS HELIUM MGNETOM.	73-019A-01			
			1 MIN AVGD VR MAG FIELD DATA,FILM	73-019A-01A	04/06/73	06/02/73	66
			1 MIN, HOURLY, DAILY AVG. CRUISE	73-019A-01B	04/06/73	12/31/80	66
			HI TIME RES B VRS, TAPE	73-019A-01C	04/30/73	12/14/74	66
			SATURN ENCOUNTER MINUTE AVG PE CO	73-019A-01D	08/30/79	09/08/79	66
			JUPITER ENC.TRAJ.INSIDE 7RJ JG CO	73-019A-01E	12/03/74	12/03/74	66
			JUPITER ENCOUNTER-1 MIN. AVGD TAP	73-019A-01F	11/24/74	12/24/74	66
			HRLY & DAILY MAG FLD AVGS	73-019A-01G	04/06/73	12/31/80	66
		SOBERMAN	PIONEER 11, ASTEROID ASTRONOMY	73-019A-03			
			ASTEROID/METEOROID/SKY EMISSIONS	73-019A-03A	04/11/73	12/29/74	67
			DATA ANALYSIS, FINAL REPORT	73-019A-03B	N/A		67
		VAN ALLEN	PIONEER 11,JOVIAN CHARGED PARTICL	73-019A-11			
			PION-11 JUPITER ENCOUNTER TAPES	73-019A-11A	11/19/74	12/12/74	67
			SATURN ENC.-CHARGED PARTICLES	73-019A-11B	08/30/79	09/05/79	67
			ONE HOUR CRUISE AVERAGES	73-019A-11C	04/06/73	05/18/82	67
		WEINBERG	PIONEER 11,ZODIACAL LIGHT PHOTOM.	73-019A-15			
			STARLIGHT/ZODIACAL LIGHT EXPER	73-019A-15A	05/28/74	09/24/74	67
PIONEER VENUS 1	05/20/78			78-051A			
			ORBIT PLOTS, MFICHE	78-051A-00D	12/05/78	03/28/86	67
			ATTITUDE-ORBIT LISTINGS, MFICHE	78-051A-00E	12/05/78	07/17/86	68
			IONOPAUSE,BOWSHOCK CROSS TIME,LOC	78-051A-00F	12/05/78	11/19/81	68
			IONOPAUSE,BOWS CROSS TIME+LOC FIC	78-051A-00G	12/05/78	11/19/81	68
		BARNES	PIO780R-SOLAR WIND PLASMA ANALYZR	78-051A-18			
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			PLASMA ANALYZER DATA 12-78	78-051A-18B	12/11/78	12/11/78	68
			SOLAR WIND PLASMA (UADS-LFD FILE)	78-051A-18C	12/05/78	11/26/81	68
		BRACE	PIO780R,ELECTRON TEMPERATUR PROBE	78-051A-01			
			ELECTRON TEMP DENSITY (UADS-LFD)	78-051A-01A	12/05/78	11/26/81	68
			CD OBSERVED IONOPAUSE LOCATIONS	78-051A-01B	12/05/78	08/07/81	69
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		CROFT	PIO780R, RADIO SCIENCE TEAM	78-051A-03			
			GAS+PLASMA ENVIR.SIGS STRENGTH LT	78-051A-03G	12/12/78	11/28/79	69
		EVANS	PIO780R,GAMMA-RAY BURST DETECTOR	78-051A-05			
			OGBD SOLAR EVENTS	78-051A-05A	06/07/80	06/29/80	69
			OGBD HOURLY AVERAGES	78-051A-05B	05/22/78	09/07/83	69
			OGBD HOURLY AVERAGES-MFICHE	78-051A-05C	05/22/78	09/07/83	69
		KEATING	PIO780R, ATMOSPHERIC DRAG (OAD)	78-051A-19			
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			OAD(SED) PV ATM. DRAG MODEL	78-051A-19B	12/09/78	08/07/79	70
			OAD(SED) PV ATM DRAG OBS ORBS-246	78-051A-19C	12/09/78	08/07/79	70
		KLIORE	PIO780R, RADIO OCCULTATION (OOCC)	78-051A-20			
			S-BAND,X-BAND RADIO OCCULTATION	78-051A-20A	12/05/78	02/27/79	70
		KNUDSEN	PIO780R,RETARDING POTENTIAL ANAL.	78-051A-07			
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			ONMS VENUS SUMMARY, LOW FREQ DATA	78-051A-11B	12/24/78	08/13/80	71
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			TOPOGRAPHIC MAPS	78-051A-02A	05/28/80	05/28/80	71
			RADAR MEASUREMENT (UADS-LFD FILE)	78-051A-02B	12/05/78	11/26/81	71
			RADAR ALTIM. COMPOSITE DATA	78-051A-02C	12/05/78	09/01/81	71
			ALTIMETRIC & RADIOMETRIC, LFD	78-051A-02D	12/08/78	03/19/81	71
		PHILLIPS	PIO780R,INTERNAL DENS.DIST.(01DD)	78-051A-23			
			LINE-OF-SIGHT ACCL PLOTS + LIST	78-051A-23A	03/01/79	08/30/80	71
			GRAVITATIONAL ACCELERATION DATA	78-051A-23B	12/09/79	08/29/80	71

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			GRAV.FIELD OF VENUS,PRELIM.ANAL.	78-051A-23D	N/A		72
			GRAVITY ANOMALIES ON VENUS	78-051A-23E	N/A		72
			GRAVITY ANOM. CORREL. WITH TOPOG.	78-051A-23F	N/A		72
			LINE-OF-SIGHT DATA ON TAPE	78-051A-23G	N/A		72
		RUSSELL	PIO780R-TRIAX FLUXG MAGNETOMETER	78-051A-12			
			24 SEC AVGD DATA (UADS-LFD FILE)	78-051A-12A	12/05/78	11/26/81	72
			CD 32 SEC. TOTAL MAG FIELD DATA	78-051A-12B	04/04/79	06/03/79	72
			CD 32 SEC MAG + PEAK ELEC FLD	78-051A-12C	06/08/79	08/08/79	72
			SEDR LIST OF EPHEMERIS DATA	78-051A-12D	03/05/82	07/23/83	73
			HI-RES, 12-S, & 2-MIN B & E PLOTS	78-051A-12E	12/05/78	09/05/84	73
			12-S B+E FIELD, PERIAPSIS	78-051A-12F	12/05/78	05/28/84	73
			2-MIN OVERLAPPED AVG,EVERY MIN.	78-051A-12G	12/06/78	09/30/84	73
		SCARF	PIO780R-ELECTRIC FIELD DET.	78-051A-13			
			24 SEC AVGD DATA (UADS-LFD FILE)	78-051A-13A	12/05/78	11/26/81	73
			CD 32 SEC MAG MAG + PEAK ELEC FLD	78-051A-13B	06/08/79	08/08/79	73
			HI-RES, 12-S, & 2-MIN B & E PLOTS	78-051A-13C	12/05/78	09/05/84	74
			2-MIN OVERLAPPED AVG,EVERY MIN.	78-051A-13D	12/06/78	09/30/84	74
		SHAPIRO	PIO780R, CELESTIAL MECHANICS	78-051A-21			
			HIGH-RESOLUTION VENUS GRAVITY DAT	78-051A-21A	04/25/79	05/28/79	74
			GRAVIT POTENTIAL MODEL BETA REGIO	78-051A-21B	04/25/79	05/28/79	74
		STEWART	PIO780R,UV SPECTOMTR(1100-3400A)	78-051A-15			
			FALSE COLOR IMAGES	78-051A-15A	05/29/79	05/29/79	74
			AIRGLOW MEASUREMENT (UADS-LFD)	78-051A-15B	12/05/78	11/26/81	74
		TAYLOR	PIO780R,TEMPERATURE SOUNDER (OIR)	78-051A-16			
			OIR RADIANCE DATA	78-051A-16A	12/12/78	02/14/79	75
			COMP ENHANCMNT OF THERMAL EMISSON	78-051A-16B	N/A		75
			ZONAL AIR TEMP. VS LATITUDE	78-051A-16C	12/08/78	01/13/79	75
		TAYLOR, JR.	PIO780R, ION MAS SPECT.(1-60 AMU)	78-051A-17			
			12 SEC AVGD ION DEN (UADS-LFD)	78-051A-17A	12/05/78	11/26/81	75
			12-SEC ION DENSITIES(REPLACES17A)	78-051A-17B	12/05/78	05/29/84	75
		TRAVIS	PIO780R, CLOUD PHOTOPOLARIMETER	78-051A-06			
			PRESS RELEASE PHOTOS	78-051A-06A	12/13/78	05/28/79	75
			DIGITAL MAP IMAGES ON MAG TAPE	78-051A-06B	12/08/78	11/12/81	75
			OCPP IMAGES	78-051A-06C	12/05/78	07/15/79	76
		WOO	PIO780R,ATM.SOL.CORONA TURBL.OTUR	78-051A-22			
			RADIO OCCULT ATM TURBULENCE	78-051A-22A	12/13/78	02/05/79	76
PIONEER VENUS 2	08/08/78			78-078A			
		TAYLOR, JR.	PIO78PA, ION-MASS SPECTROMETER	78-078A-02			
			BIMS DATA, 850-140KM DATA ON TAPE	78-078A-02B	12/09/78	12/09/78	76
		VON ZAHN	PIO78PA,NEUTRAL PART.MASS SPECTMR	78-078A-03			
			UPPER ATM. MORNING CONDITIONS	78-078A-03B	12/09/78	12/09/78	76
PIONEER VENUS PROBE LRG	08/08/78			78-078D			
		BOESE	PIO78PB,IR RADIOMETER	78-078D-05			
			(LIR) SED PRE, DESC, CALIB DATA	78-078D-05A	12/09/78	12/09/78	76
		COUNSELMAN	PIO78PB,ATMS.CIRCULATION PATTERNS	78-078D-09			
			CD REL. CRUSTAL + ATMOS.VEL.COMP	78-078D-09B	12/09/78	12/09/78	76
		CROFT	PIO78PB,ATMOS. PROPAGATION (MPRO)	78-078D-11			
			SPECTRAL AMPS, SIG+NOISE SPECTRA	78-078D-11A	12/09/78	12/09/78	77
			PROBE SPECTRA OF SIGNAL + NOISE	78-078D-11B	12/09/78	12/09/78	77
			GAS + PLASMA ENVIR. SIGNL STRNGTH	78-078D-11C	12/09/78	12/09/78	77
		HOFFMAN	PIO78PB,NEUTRAL PART.MASS SPECTRM	78-078D-06			
			GAS SMPLG TBLS,1-15AMU+15-208AMU	78-078D-06A	12/09/78	12/09/78	77
		OYAMA	PIO78PB, GAS CHROMATOGRAPH	78-078D-04			
			LOWER ATMOSPHERE COMPOSITON (SED)	78-078D-04A	12/09/78	12/09/78	77
		RAGENT	PIO78PB,CLOUD EXTENT,STRUC.,DISTR	78-078D-02			
			SED NEPHEL. BACKSCATTER CHAN DATA	78-078D-02A	12/09/78	12/09/78	77
		SEIFF	PIO78PB,ATMOSPHERIC STRUCTURE	78-078D-01			
			PRESSURE AND TEMPERATURE DATA	78-078D-01A	12/09/78	12/09/78	77
		TOMASKO	PIO78PB,SOLAR ENERGY PENETRATION	78-078D-07			
			(LSFR) SED SOL., UP, DN, NET FLUX	78-078D-07A	12/09/78	12/09/78	78
PIONEER VENUS PROBE SM1	08/08/78			78-078E			
		COUNSELMAN	PIO78PC,ATMS.CIRCULATION PATTERNS	78-078E-03			
			SN1 CD REL.CRUSTAL+ATMOS.VEL.COMP	78-078E-03B	12/09/78	12/09/78	78
		CROFT	PIO78PC,ATMOSPH.PROPAGATION(MPRO)	78-078E-07			
			SPECTRAL AMPS, SIG+NOISE SPECTRA	78-078E-07A	12/09/78	12/09/78	78
			GAS + PLASMA ENVIR. SIGNL STRNGTH	78-078E-07C	12/09/78	12/09/78	78
		RAGENT	PIO78PC,CLOUD EXTENT,STRUC.,DISTR	78-078E-02			
			SN1(NP) SED BACKSCT CHAN. DATA	78-078E-02A	12/09/78	12/09/78	78
			SED AMB. BKGR. RAD., SPECT. FUNC.	78-078E-02B	12/09/78	12/09/78	79
			SED TIME VS. TEMP. DATA	78-078E-02C	12/09/78	12/09/78	79
		SEIFF	PIO78PC,ATMOSPHERIC STRUCTURE	78-078E-01			
			(SAS) SED LOW ATMOS PROPERTIES	78-078E-01A	12/09/78	12/09/78	79
		SUOMI	PIO78PC, INFRARED RADIOMETER	78-078E-04			
			SNFR SED NET FLUX RADIOMETER	78-078E-04A	12/09/78	12/09/78	79
PIONEER VENUS PROBE SM2	08/08/78			78-078F			
		COUNSELMAN	PIO78PD,ATMS.CIRCULATION PATTERNS	78-078F-03			
			SN2 CD REL.CRUSTAL+ATMOS.VEL.COMP	78-078F-03B	12/09/78	12/09/78	79
		CROFT	PIO78PD,ATMOSPH.PROPAGATION(MPRO)	78-078F-07			
			SPECTRAL AMPS, SIG+NOISE SPECTRA	78-078F-07A	12/09/78	12/09/78	79
			PROBE SPECTRA OF SIGNAL + NOISE	78-078F-07B	12/09/78	12/09/78	80
			GAS + PLASMA ENVIR. SIGNL STRNGTH	78-078F-07C	12/09/78	12/09/78	80
		RAGENT	PIO78PD,CLOUD EXTENT,STRUC.,DISTR	78-078F-02			
			(SN) SED BKSCAT., ANG. WT. FN.	78-078F-02A	12/09/78	12/09/78	80
			(SN) SED TIME VS TEMP. DATA	78-078F-02B	12/09/78	12/09/78	80
			(SN) SED AMB. BKGR. RAD., SP. FN.	78-078F-02C	12/09/78	12/09/78	80
		SEIFF	PIO78PD,ATMOSPHERIC STRUCTURE	78-078F-01			
			(SAS) SED LOW ATMOS PROPERTIES	78-078F-01A	12/09/78	12/09/78	80
		SUOMI	PIO78PD, INFRARED RADIOMETER	78-078F-04			
			SNFR SED NET FLUX RADIOMETER	78-078F-04A	12/09/78	12/09/78	81
PIONEER VENUS PROBE SM3	08/08/78			78-078G			
		COUNSELMAN	PIO78PE,ATMS.CIRCULATION PATTERNS	78-078G-03			
			SN3 CD REL.CRUSTAL+ATMOS.VEL.COMP	78-078G-03B	12/09/78	12/09/78	81
		CROFT	PIO78PE,ATMOSPH.PROPAGATION(MPRO)	78-078G-07			
			SPECTRAL AMPS, SIG+NOISE SPECTRA	78-078G-07A	12/09/78	12/09/78	81
			PROBE SPECTRA OF SIGNAL + NOISE	78-078G-07B	12/09/78	12/09/78	81

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			GAS + PLASMA ENVIR. SIGNL STRNGTH	78-078G-07C	12/09/78	12/09/78	81
		RAGENT	PIO78PE,CLOUD EXTENT,STRUC.,DISTR	78-078G-02			
			(SN) SED BACKSCATTER CHANNEL DATA	78-078G-02A	12/09/78	12/09/78	81
			(SN) SED AMB. BKGR. RAD., SP. FN.	78-078G-02B	12/09/78	12/09/78	81
			SED TIME VS. TEMP. DATA	78-078G-02C	12/09/78	12/09/78	82
		SEIFF	PIO78PE,ATMOSPHERIC STRUCTURE	78-078G-01			
			(SAS) SED LOW ATMOS PROPERTIES	78-078G-01A	12/09/78	12/09/78	82
		SUOMI	PIO78PE, INFRARED RADIOMETER	78-078G-04			
			SNFR SED NET FLUX RADIOMETER	78-078G-04A	12/09/78	12/09/78	82
VENERA 9	06/08/75			75-050A			
		VAISBERG	VENERA 9, PLASMA ELECTRST SPECTRM	75-050A-10			
			1-HR AVE SOLAR WIND V + T, MFICHE	75-050A-10A	06/09/75	10/31/75	82
VENERA 9 DESCENT CRAFT	06/08/75			75-050D			
		UNKNOWN	VENERA 9, PANORAMIC TELEPHOTOMETR	75-050D-01			
			LANDER PHOTOGRAPHY	75-050D-01A	10/22/75	10/22/75	82
VENERA 10	06/14/75			75-054A			
		VAISBERG	VENERA 10,PLASMA ELECTRST SPECTRM	75-054A-10			
			1-HR AVE SOLAR WIND V + T, MFICHE	75-054A-10A	06/16/75	04/19/76	82
VENERA 10 DESCENT CRAFT	06/14/75			75-054D			
		UNKNOWN	VENERA 10,PANORAMIC TELEPHOTOMETR	75-054D-01			
			LANDER PHOTOGRAPHY	75-054D-01A	10/25/75	10/25/75	83
VENERA 13 DESCENT CRAFT	10/30/81			81-106D			
		UNKNOWN	VENERA 13, PANORAMIC TELEPHOTOMTR	81-106D-01			
			B/W SURFACE PHOTOS, PANORAMA	81-106D-01A	03/01/82	03/01/82	83
			COLOR SURFACE PHOTOS, PANORAMA	81-106D-01B	03/01/82	03/01/82	83
VENERA 14 DESCENT CRAFT	11/04/81			81-110D			
		UNKNOWN	VENERA 14, PANORAMIC TELEPHOTOMTR	81-110D-01			
			B/W SURFACE PHOTOS, PANORAMA	81-110D-01A	03/05/82	03/05/82	83
VIKING 1 LANDER	08/20/75			75-075C			
			BIBLIOGRAPHY OF VIKING MARS SCI	75-075C-00D	N/A		83
		ARVIDSON	VIKING 1 LANDER,LANDER IMAGING	75-075C-06			
			BLACK & WHITE PRESS RELEASE PHOTO	75-075C-06A	07/20/76	07/25/76	83
			COLOR LANDER PRESS RELEASE PHOTOS	75-075C-06B	07/26/76	10/06/76	83
			TDR B/W PHOTOGRAPHY	75-075C-06C	07/20/76	02/24/82	84
			EDR B/W PHOTOGRAPHY	75-075C-06D	07/20/76	08/06/82	84
			PICTURE CAT OF PRIME MISSION EDR	75-075C-06E	N/A		84
			TDR COLOR PHOTOGRAPHY	75-075C-06F	07/22/76	11/03/76	84
			LANDER HI-RES MOSAICS	75-075C-06H	N/A		84
			LANDER DONUT PROJECTION IMAGE	75-075C-06I	08/09/76	08/19/76	84
			MULTI-CE-LABEL LANDER PHOTOS	75-075C-06J	03/11/77	03/12/77	84
			TDR-IPL PRIME MISSION CATALOG	75-075C-06K	N/A		84
			CATALOG OF PRIMARY TDR COL IMAGES	75-075C-06L	N/A		85
			HI-RES MOSAIC INDEX + DESCRIPTION	75-075C-06M	N/A		85
			PRIME, EXT, CONT MISSION PIC CAT	75-075C-06N	N/A		85
			EDR IMAGE DATA ON TAPE	75-075C-06O	07/20/76	08/08/78	85
			HIGH RESOLUTION MOSAIC	75-075C-06P	N/A		85
			STEREO HIGH RESOLUTION	75-075C-06Q	N/A		85
			STEREO MOSAICS	75-075C-06R	N/A		85
			TOPO MAP ATLAS-LANDING SITE	75-075C-06T	N/A		85
			HIGH RESOLUTION LITHO MOSAICS	75-075C-06W	N/A		85
			RANGE DATA SET OVERLAYS DATA	75-075C-06X	N/A		86
			PLANETARY IMAGING DATA ON MAG TAP	75-075C-06Y	N/A		86
		BIEMANN	VIKING 1 LANDER, MOLEC. ANALYSIS	75-075C-04			
			GCMS SOIL ANALYSIS FLIGHT DATA	75-075C-04A	N/A		86
			SOIL ANALYSIS MASS SPECTRA	75-075C-04B	N/A		86
			SOIL ANAL CONSECUTIVE MASS SPECTR	75-075C-04C	N/A		86
			GCMS ATMOSPHERE FLIGHT DATA	75-075C-04D	N/A		86
		HARGRAVES	VIKING 1 LANDER, MAGNETIC PROP.	75-075C-10			
			INDEX OF MAGNET IMAGES ON M/FICHE	75-075C-10A	07/20/76	10/06/76	86
			MAGNET IMAGES ON ROLL FILM	75-075C-10B	07/20/76	10/06/76	86
		KLEIN	VIKING 1 LANDER, BIOLOGY	75-075C-03			
			GEX, LR, AND PR MEASUREMENTS	75-075C-03F	07/20/76	05/30/77	87
		MICHAEL, JR.	VIKING 1 LANDER, RADIO SCIENCE	75-075C-11			
			RANGE + DOPPLER DATA	75-075C-11B	06/20/76	01/28/77	87
			DECALIBRATED RANGE DATA TAPES	75-075C-11C	N/A		87
		NIER	VIKING 1 LANDER, ATMOSPH. STRUCT.	75-075C-02			
			ATMOS TEMP + PRESS LSTNGS, MFICH	75-075C-02A	07/20/76	07/20/76	87
		NIER	VIKING 1 LANDER, ATMOSPH. COMP.	75-075C-12			
			NEUT. ATMOS. MASS SPECTRA ON FILM	75-075C-12A	07/20/76	07/20/76	87
			TABLES OF M.S. CURRENTS ON FILM	75-075C-12B	07/20/76	07/20/76	87
		NIER	VIKING 1 LANDER,IONOSPHERIC PROP	75-075C-14			
			EXP.TRAJECT.-ATTITUDE DATA, TAPE	75-075C-14A	07/20/76	07/20/76	87
			RPA ION-ELECTRON DATA ON TAPE	75-075C-14B	07/20/76	07/20/76	88
			RPA ION-ELECT. DATA ON 35MM FILM	75-075C-14C	07/20/76	07/20/76	88
		SHORTHILL	VIKING 1 LANDER, PHYSICAL PROP.	75-075C-01			
			PHYSICAL PROPERTIES REPORTS	75-075C-01A	N/A		88
		TILLMAN	VIKING 1 LANDER, METEOROLOGY	75-075C-07			
			SANMET TEMP+VCTR WND VS TIME-LIST	75-075C-07A	07/20/76	05/16/77	88
			VECTOR WIND/TEMP VS TIME(SEC)PLTS	75-075C-07B	07/20/76	07/20/78	88
			VECTOR WIND/TEMP VS TIME(HRS)PLTS	75-075C-07C	07/20/76	08/29/78	88
			METEOROLOGY PRESSURE TAPE	75-075C-07D	07/19/76	09/02/76	88
			METEOROLOGY WNDTMP TAPE	75-075C-07E	07/19/76	09/02/76	88
			DAILY PLOTS OF WNDTMP + PRESSURE	75-075C-07F	07/20/76	09/01/76	89
			PRINTED PRESS + WINDTMP CATALOG	75-075C-07G	07/20/76	10/18/76	89
			WIND AND TEMPERATURE CATALOG	75-075C-07H	07/20/76	09/14/78	89
			SOL AVG PRESS,PLOTS & LISTING	75-075C-07I	N/A		89
			SOL AVERAGE PRESSURE TAPE	75-075C-07J	07/20/76	11/12/82	89
		TOULMIN, 3RD	VIKING 1 LANDER,INORG.CHEM.INVEST	75-075C-13			
			SPECTRA PLOTS ON M/FICHE	75-075C-13A	11/13/75	02/23/78	90
			COMMAND, SPECTRA, TEMP HIST MTAPE	75-075C-13E	07/20/76	10/29/76	90
			COMMAND HISTORY ON M'FICHE	75-075C-13F	07/21/76	11/24/79	90
			TEMPERATURE HISTORY ON M'FICHE	75-075C-13G	07/21/76	12/05/79	90
VIKING 1 ORBITER	08/20/75			75-075A			
			BIBLIOGRAPHY OF VIKING MARS SCI	75-075A-00D	N/A		90
		CARR	VIKING 1 ORBITER, IMAGERY	75-075A-01			
			BLACK & WHITE PRESS RELEASE PHOTO	75-075A-01A	04/12/76	11/22/78	90

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			RECTILINEAR ORBITAL PHOTOGRAPHY	75-075A-01B	11/20/76	08/15/80	90
			ORTHOGRAPHIC ORBITAL PHOTOGRAPHY	75-075A-01C	07/23/76	05/13/77	90
			COLOR PRESS RELEASE PHOTOGRAPHY	75-075A-01D	06/18/76	03/03/77	91
			SEDR SUPPORT DATA ON MICROFILM	75-075A-01E	06/23/76	09/20/76	91
			B/W MOSAICS	75-075A-01F	N/A		91
			STEREO PAIRS 5X5-INCH FILM	75-075A-01H	06/23/76	04/22/77	91
			INDEX BY LAT/LON AND 10 DEG BOX	75-075A-01I	N/A		91
			MOSAIC SUMMARY AND INDEX,MFILM	75-075A-01J	N/A		91
			INDEX TO PHOBOS, DEIMOS, STAR	75-075A-01K	N/A		91
			RECT + ORTHO INDEX BY ROLL FILE	75-075A-01L	N/A		92
			LIST OF IMAGES BY QUAD, LAT/LONG	75-075A-01M	N/A		92
			IPL PROCESSED PHOTOGRAPHY	75-075A-01N	11/08/76	03/26/79	92
			PRIME, EXT, CONT MISSION PIC CAT	75-075A-01O	N/A		92
			IPL PROCESSED COLOR PHOTOGRAPHY	75-075A-01P	07/30/76	07/30/76	92
			USGS COLOR PHOTOMOSAICS	75-075A-01Q	N/A		92
			USGS PHOTOMOSAICS 5M	75-075A-01R	N/A		92
			USGS PHOTOMOSAICS 7.5M	75-075A-01S	N/A		92
			SEDR QUAD/SUBQUAD PLOTS	75-075A-01T	N/A		93
			MARS IN 3D,MOVIEFILM	75-075A-01U	N/A		93
			B/W PHOTOMOSAICS 1:500 K	75-075A-01V	N/A		93
			USGS PHOTOMOSAICS 1:2M	75-075A-01W	N/A		93
			IMAGING DATA ON MAGNETIC TAPE	75-075A-01X	06/18/76	08/15/80	93
		FARMER	VIKING 1 ORBITER, SPECTROMETER	75-075A-03			
			ATMOSPHERIC WATER DATA ON TAPE	75-075A-03A	06/18/76	06/15/80	93
		KIEFFER	VIKING 1 ORBITER, RADIOMETER	75-075A-02			
			DECALIBRATED IRTM DATA ON MAGTAPE	75-075A-02A	06/22/76	02/23/79	93
		MICHAEL, JR.	VIKING 1 ORBITER,RADIO SCIENCE	75-075A-04			
			381 MHZ RELAY LINK	75-075A-04A	07/21/76	10/04/76	93
			RADIO OCCULTATION DATA TAPES	75-075A-04B	10/06/76	11/01/76	93
			ORBITER TRACKING DATA ON MAG TAPE	75-075A-04D	N/A		94
			DECALIBRATED RANGE DATA TAPES	75-075A-04E	N/A		94
VIKING 2 LANDER	09/09/75			75-083C			
			BIBLIOGRAPHY OF VIKING MARS SCI	75-083C-00D	N/A		94
		ANDERSON	VIKING 2 LANDER, SEISMOLOGY	75-083C-08			
			SEISMIC DATA PROGRAM TAPE	75-083C-08A	N/A		94
			SEISMIC EDR-2 TAPES	75-083C-08B	09/03/76	03/29/78	94
			SEISMOGRAM RECORDS SOL 1-8 M*FILM	75-083C-08C	09/04/76	09/11/76	94
		ARVIDSON	VIKING 2 LANDER, LANDER IMAGING	75-083C-06			
			BLACK & WHITE PRESS RELEASE PHOTO	75-083C-06A	09/09/75	02/22/77	94
			PRESS-RELEASE COLOR PHOTOS	75-083C-06B	11/26/76	01/17/77	94
			TDR LANDER IMAGING PRODUCTS 5X12	75-083C-06C	09/03/76	06/07/77	95
			EDR BLACK AND WHITE PHOTOGRAPHY	75-083C-06D	09/03/76	11/05/76	95
			PICTURE CAT OF PRIME MISSION EDR	75-083C-06E	N/A		95
			TDR COLOR IMAGES 5X12-INCH	75-083C-06F	09/05/76	11/05/76	95
			LANDER HI-RES MOSAICS	75-083C-06H	N/A		95
			LANDER DONUT PROJECTION IMAGE	75-083C-06I	09/21/76	10/07/76	95
			MULTI-CE-LABEL LANDER PHOTOS	75-083C-06J	06/02/77	06/02/77	95
			TDR-IPL PRIME MISSION CATALOG	75-083C-06K	N/A		95
			CATALOG OF PRIMARY TDR COL IMAGES	75-083C-06L	N/A		96
			HI-RES MOSAIC INDEX + DESCRIPTION	75-083C-06M	10/08/77	10/23/77	96
			PRIME, EXT, CONT MISSION PIC CAT	75-083C-06N	N/A		96
			EDR IMAGE DATA ON TAPE	75-083C-06O	09/02/76	05/16/78	96
			HIGH RESOLUTION MOSAIC	75-083C-06P	N/A		96
			STEREO HIGH RESOLUTION	75-083C-06Q	N/A		96
			STEREO MOSAICS	75-083C-06R	N/A		96
			TOPO MAP ATLAS-LANDING SITE	75-083C-06T	N/A		96
			HIGH RESOLUTION LITHO MOSAICS	75-083C-06W	N/A		96
			IMAGING DATA ON MAGNETIC TAPE	75-083C-06X	09/03/76	02/01/80	97
		BIEMANN	VIKING 2 LANDER, MOLEC. ANALYSIS	75-083C-04			
			GCMS SOIL ANALYSIS FLIGHT DATA	75-083C-04A	N/A		97
			SOIL ANALYSIS MASS SPECTRA	75-083C-04B	N/A		97
			SOIL ANAL CONSECUTIVE MASS SPECTR	75-083C-04C	N/A		97
			GCMS ATMOSPHERE FLIGHT DATA	75-083C-04D	N/A		97
		HARGRAVES	VIKING 2 LANDER, MAGNETIC PROP.	75-083C-10			
			INDEX OF MAGNET IMAGES ON M/FICHE	75-083C-10A	09/03/76	10/31/76	97
			MAGNET IMAGES ON ROLL FILM	75-083C-10B	09/03/76	10/31/76	97
		KLEIN	VIKING 2 LANDER, BIOLOGY	75-083C-03			
			GEX, LR, AND PR MEASUREMENTS	75-083C-03F	09/04/76	05/29/77	97
		MICHAEL, JR.	VIKING 2 LANDER, RADIO SCIENCE	75-083C-11			
			RANGE + DOPPLER DATA	75-083C-11B	09/05/76	01/29/77	98
			DECALIBRATED RANGE DATA TAPES	75-083C-11C	N/A		98
		NIER	VIKING 2 LANDER, ATMOSPH. STRUCT.	75-083C-02			
			ATMOS TEMP + PRESS LSTNGS, MFICH	75-083C-02A	09/03/76	09/03/76	98
		NIER	VIKING 2 LANDER, ATMOSPH. COMP.	75-083C-12			
			NEUT. ATMOS. MASS SPECTRA ON FILM	75-083C-12A	09/03/76	09/03/76	98
			TABLES OF M.S.CURRENTS ON FILM	75-083C-12B	09/03/76	09/03/76	98
		NIER	VIKING 2 LANDER,IONOSPHERIC PROP	75-083C-14			
			EXP.TRAJECT.-ATTITUDE DATA, TAPE	75-083C-14A	09/03/76	09/03/76	98
			RPA ION-ELECTRON DATA ON TAPE	75-083C-14B	09/03/76	09/03/76	98
			RPA ION-ELECT. DATA ON 35MM FILM	75-083C-14C	09/03/76	09/03/76	99
		SHORTHILL	VIKING 2 LANDER, PHYSICAL PROP.	75-083C-01			
			PHYSICAL PROPERTIES REPORTS	75-083C-01A	N/A		99
		TILLMAN	VIKING 2 LANDER, METEOROLOGY	75-083C-07			
			SANMET TEMP+VCTR WND VS TIME-LIST	75-083C-07A	11/17/76	02/11/78	99
			VECTOR WIND/TEMP VS TIME(SEC)PLTS	75-083C-07B	09/03/76	05/17/79	99
			VECTOR WIND/TEMP VS TIME(HRS)PLTS	75-083C-07C	09/03/76	05/16/79	99
			METEOROLOGY PRESSURE TAPE	75-083C-07D	09/03/76	11/04/76	99
			METEOROLOGY WNDTMP TAPE	75-083C-07E	09/03/76	11/04/76	99
			DAILY PLOTS OF WNDTMP + PRESSURE	75-083C-07F	07/20/76	09/29/76	99
			PRINTED PRESS + WNDTMP CATALOG	75-083C-07G	09/04/76	11/05/76	100
			WIND AND TEMPERATURE CATALOG	75-083C-07H	09/04/76	12/05/78	100
			SOL AVG PRESS,PLOTS & LISTING	75-083C-07I	N/A		100
			SOL AVERAGE PRESSURE TAPE	75-083C-07J	09/04/76	07/21/79	100
		TOULMIN, 3RD	VIKING 2 LANDER,INORG.CHEM.INVEST	75-083C-13			
			SPECTRA PLOTS ON M/FICHE	75-083C-13A	11/21/75	03/01/78	100
			COMMAND, SPECTRA, TEMP HIST MTAPE	75-083C-13E	09/03/76	11/01/76	100

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			COMMAND HISTORY ON M*FICHE	75-083C-13F	09/06/76	10/21/78	101
			TEMPERATURE HISTORY ON M*FICHE	75-083C-13G	09/06/76	11/05/78	101
VIKING 2 ORBITER	09/09/75			75-083A			
			BIBLIOGRAPHY OF VIKING MARS SCI	75-083A-00D	N/A		101
		CARR	VIKING 2 ORBITER, IMAGERY	75-083A-01			
			BLACK & WHITE PRESS RELEASE PHOTO	75-083A-01A	10/16/75	06/17/78	101
			B/W MOSAICS	75-083A-01B	N/A		101
			RECTILINEAR ORBITAL PHOTOGRAPHY	75-083A-01D	08/12/76	06/24/78	101
			BLACK & WHITE ORTHOGRAPHIC PHOTOS	75-083A-01E	08/12/76	11/27/77	101
			STEREO PAIRS 5X5-INCH FILM	75-083A-01F	09/22/76	04/24/77	102
			SEDR SUPPORT DATA ON MICROFILM	75-083A-01G	08/11/76	07/23/78	102
			INDEX BY LAT/LONG AND 10 DEG BOX	75-083A-01H	N/A		102
			MOSAIC SUMMARY AND INDEX, M/FILM	75-083A-01I	N/A		102
			INDEX TO PHOBOS, DEIMOS, STAR	75-083A-01J	N/A		102
			RECT + ORTHO INDEX BY ROLL FILE	75-083A-01K	N/A		102
			PRIME, EXT, CONT MISSION PIC CAT	75-083A-01L	08/05/76	02/02/77	102
			LIST OF IMAGES BY QUAD, LAT/LONG	75-083A-01M	N/A		102
			IPL PROCESSED PHOTOGRAPHY	75-083A-01N	11/24/76	07/05/78	103
			IPL PROCESSED COLOR PHOTOGRAPHY	75-083A-01O	11/04/76	05/30/77	103
			COLOR PRESS RELEASE PHOTOGRAPHY	75-083A-01P	06/14/78	06/14/78	103
			USGS PHOTO MOSAICS 5M	75-083A-01Q	N/A		103
			USGS PHOTOMOSAICS 1:7.5 M	75-083A-01R	N/A		103
			SEDR QUAD/SUBQUAD PLOTS	75-083A-01S	N/A		103
			MARS IN 3D, MOVIEFILM	75-083A-01T	N/A		103
			USGS PHOTOMOSAICS 1:2M	75-083A-01V	N/A		103
			IMAGING DATA ON MAGNETIC TAPE	75-083A-01W	08/12/76	06/24/78	103
		FARMER	VIKING 2 ORBITER, SPECTROMETER	75-083A-03			
			ATMOSPHERIC WATER DATA ON TAPE	75-083A-03A	07/31/76	07/24/78	104
		KIEFFER	VIKING 2 ORBITER, RADIOMETER	75-083A-02			
			DECALIBRATED IRTM DATA ON MAGTAPE	75-083A-02A	08/11/76	07/24/78	104
		MICHAEL, JR.	VIKING 2 ORBITER,RADIO SCIENCE	75-083A-04			
			381 MHZ RELAY LINK	75-083A-04A	07/21/76	10/04/76	104
			DECALIBRATED RANGE DATA TAPES	75-083A-04B	N/A		104
			ACCELERATION LISTS AND PLOTS	75-083A-04F	10/00/77	07/00/78	104
			GRAVITATIONAL ACCELERATION DATA	75-083A-04G	12/16/77	09/28/79	104
VOYAGER 1	09/05/77			77-084A			
		BRIDGE	VOYAGER 1, PLASMA SPECTROMETER	77-084A-06			
			JUPITER PLASMA SUMMARY TAPES (HG)	77-084A-06A	03/02/79	03/24/79	104
			JUPITER PLASMA SUMMARY TAPES (S3)	77-084A-06B	03/02/79	03/16/79	105
			JUPITER PLASMA DATA TAPE	77-084A-06C	03/01/79	03/07/79	105
			PLASMA SATURN ENCOUNTER (HG COOR)	77-084A-06D	11/09/80	11/19/80	105
			SATURN ENCOUNTER L1 COORD	77-084A-06E	08/23/81	08/29/81	105
		BROADFOOT	VOYAGER 1, UV SPECTROMETER	77-084A-04			
			UV SPECTRAL DATA RECORDS	77-084A-04A	09/12/77	11/15/79	105
			UV PHOTOMETRY FOR SATURN	77-084A-04B	N/A		105
		HANEL	VOYAGER 1, IR INTERFEROMETER	77-084A-03			
			JUPITER IRIS MERGED DATA ON TAPES	77-084A-03A	02/02/79	03/15/79	105
			SATURN IRIS RADIANCE, TAPE	77-084A-03B	10/22/80	11/18/80	106
		KRIMIGIS	VOYAGER 1,PART.ANALYZR/TELESCOPE	77-084A-07			
			LOW-ENERGY SECTOR-AVG. FLUX, TAPE	77-084A-07A	02/24/79	03/21/79	106
			LOW-ENERGY TIME-AVGD. FLUX, TAPE	77-084A-07B	09/07/77	12/30/79	106
			SCAN AVERAGE,SATURN ENCOUNTER	77-084A-07C	11/12/80	11/13/80	106
		NESS	VOYAGER 1, FLUXGATE MAGNETOMETERS	77-084A-05			
			MAGNET. JUPITER SUMMARY (HG COOR)	77-084A-05A	02/25/79	03/24/79	106
			MAGNET. JUPITER SUMMARY (S3 COOR)	77-084A-05B	03/02/79	03/16/79	106
			48-SEC MAG FLD PLOTS-JUPITER,FICH	77-084A-05C	02/27/79	03/23/79	107
			SATURN ENCOUNTER DATA (HG COOR)	77-084A-05D	11/09/80	11/20/80	107
			SATURN ENCOUNTER L1 COORD	77-084A-05E	08/23/81	08/29/81	107
			HOUR AVERAGE IMF, HG COORD, TAPE	77-084A-05F	09/06/77	02/28/79	107
		SCARF	VOYAGER 1,PLASMA WAVE (.01-56KHZ)	77-084A-13			
			24 HR PLASMA WAVE PLOTS, MFILM	77-084A-13A	01/19/79	11/30/80	107
		SMITH	VOYAGER 1, IMAGING	77-084A-01			
			COLOR PRESS RELEASE PHOTOGRAPHY	77-084A-01A	12/10/78	11/13/80	107
			SYSTEMATIC MTIS IMAGES,JUPITER	77-084A-01B	01/04/79	11/13/80	107
			BLACK & WHITE PRESS RELEASE PHOTO	77-084A-01C	01/01/79	11/16/80	108
			VOYAGER INDEX ON MFILM	77-084A-01D	N/A		108
			PICTURE CATALOG OF JUP ENCOUNTER	77-084A-01E	N/A		108
			BLACK AND WHITE MOSAICS, JUP SATS	77-084A-01F	N/A		108
			COLOR MOSAICS OF JUP'S SATS.	77-084A-01G	N/A		108
			IMAGERY OF SATURN'S SATELLIES	77-084A-01H	N/A		108
			SELECTED IPL IMAGES OF SATURN SAT	77-084A-01I	N/A		108
			SYSTEMATIC MTIS IMAGES,SATURN	77-084A-01J	N/A		108
			PICTURE CATALOG OF SAT ENCOUNTER	77-084A-01K	N/A		108
			FOOTPRINTS+AIRBR MAPS OF JUP SATS	77-084A-01L	N/A		108
			IMAGING DATA ON MAGNETIC TAPE	77-084A-01M	01/04/79	11/17/80	108
		STONE	VOYAGER 1, COSMIC RAY TELESCOPE	77-084A-08			
			JUPITER FLUX TIME-HISTORY RECORDS	77-084A-08A	02/28/79	03/17/79	109
		TYLER	VOYAGER 1, COHERNT S+X BAND RADIO	77-084A-02			
			COMPLEX ENVELOPE OCCULTATION SIGN	77-084A-02A	03/05/79	03/05/79	109
			MERGED OCCULTATION DATA	77-084A-02B	03/05/79	07/10/79	109
			RADIO OCCULTATION-SATURN'S RINGS	77-084A-02C	11/13/80	11/13/80	109
			SATURN RADIO OCCULTATION DATA,TAP	77-084A-02D	11/13/80	11/13/80	109
			TITAN RADIO OCCULTATION DATA,TAPE	77-084A-02E	11/12/80	11/12/80	109
			SATURN ENCOUNTER DATA ON MAG TAPE	77-084A-02F	10/21/80	12/05/80	110
			RADIO OCCULT,TITAN ENCOUNT (MED)	77-084A-02G	11/12/80	11/12/80	110
			RADIO OCCULT,SATURN ENCOUNT (NAR)	77-084A-02H	11/13/80	11/13/80	110
			RADIO OCCULT,SATURN ENCOUNT (MED)	77-084A-02I	N/A		110
			OPACITY AND PHASE OF RINGS	77-084A-02J	N/A		110
		WARWICK	VOYAGER 1, LF RF RCVR(.02-40MHZ)	77-084A-10			
			LOW BAND DYN SPECTRA PLOTS,JUP	77-084A-10A	09/05/77	12/31/79	110
			HIGH BAND DYN SPECTRA PLOTS,JUP	77-084A-10B	02/01/79	04/29/79	110
			PLANETARY RADIO ASTRONOMY DATA	77-084A-10C	09/05/77	03/31/80	111
			DECAMETRIC EMISSION CAT.15-40 MHZ	77-084A-10D	02/01/79	04/05/79	111
			LOW BAND DYN SPECTRA PLOTS,SAT	77-084A-10E	01/01/80	05/16/81	111
			HIGH BAND DYN SPECTRA PLOTS,SAT	77-084A-10F	01/01/80	05/16/81	111
VOYAGER 2	08/20/77			77-075A			

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BRIDGE	VOYAGER 2, PLASMA SPECTROMETER	77-076A-06			
	JUPITER PLASMA SUMMARY TAPES (HG)	77-076A-06A	06/19/79	08/18/79	111
	JUPITER PLASMA SUMMARY TAPES (S3)	77-076A-06B	07/04/79	08/12/79	111
	JUPITER PLASMA ANALYZED DATA TAPE	77-076A-06C	07/04/79	07/12/79	111
	PLASMA SATURN ENCOUNTER (HG COOR)	77-076A-06D	08/23/81	09/02/81	112
	SATURN ENCOUNTER L1 COORD	77-076A-06E	11/09/80	11/18/80	112
BROADFOOT	VOYAGER 2, UV SPECTROSCOPY	77-076A-04			
	UV SPECTRAL DATA RECORDS	77-076A-04A	10/27/80	10/27/80	112
	UV INTERPLAN. DATA TAPE	77-076A-04B	N/A		112
HANEL	VOYAGER 2, IR INTERFEROMETER	77-076A-03			
	JUPITER IRIS MERGED DATA ON TAPES	77-076A-03A	06/21/79	07/18/79	112
	SATURN IRIS RADIANCE, TAPE	77-076A-03B	08/13/81	09/04/81	112
KRIMIGIS	VOYAGER 2, PART ANALYZER/TELESCOP	77-076A-07			
	LOW-ENERGY SECTOR-AVG. FLUX, TAPE	77-076A-07A	07/03/79	07/25/79	112
	LOW-ENERGY TIME-AVGD. FLUX, TAPE	77-076A-07B	06/09/79	07/23/79	113
	SCAN AVERAGE,SATURN ENCOUNTER	77-076A-07C	08/24/81	08/25/81	113
LANE	VOYAGER 2,PHOTOPOLARIMETER	77-076A-11			
	PHOTOPOLARIMETER JUPITER ENC DATA	77-076A-11A	06/26/79	07/10/79	113
	SATURN,TITAN,DELTA SCORPII ENCNTR	77-076A-11B	08/12/81	08/25/81	113
NESS	VOYAGER 2, FLUXGATE MAGNETOMETER	77-076A-05			
	MAGNET. JUPITER SUMMARY (HG COOR)	77-076A-05A	06/19/79	08/18/79	113
	MAGNET. JUPITER SUMMARY (S3 COOR)	77-076A-05B	07/04/79	08/12/79	113
	48-SEC MAG FLD PLOTS-JUPITER,FICH	77-076A-05C	07/02/79	08/14/79	114
	MAGNET. SATURN ENCOUNTER(HG COOR)	77-076A-05D	08/23/81	09/02/81	114
	SATURN ENCOUNTER L1 COORD	77-076A-05E	11/09/80	11/18/80	114
	HOUR AVERAGE IMF, HG COORD, TAPE	77-076A-05F	08/20/77	09/06/79	114
SCARF	VOYAGER 2,PLASMA WAVE(.01-56 KHZ)	77-076A-13			
	24-HR PLASMA WAVE PLOTS, MFILM	77-076A-13A	05/25/79	09/05/81	114
SMITH	VOYAGER 2, IMAGING	77-076A-01			
	BLACK & WHITE PRESS RELEASE PHOTO	77-076A-01A	02/08/78	09/04/81	114
	COLOR PRESS RELEASE PHOTOGRAPHY	77-076A-01B	06/25/79	08/29/81	114
	VOYAGER INDEX ON MFILM	77-076A-01C	N/A		115
	SYSTEMATIC MTIS IMAGES,JUPITER	77-076A-01D	05/01/79	06/25/81	115
	PICTURE CATALOG OF JUP ENCOUNTER	77-076A-01E	N/A		115
	BLACK & WHITE MOSAICS OF JUP SATS	77-076A-01F	N/A		115
	SELECTED IPL IMAGES OF SATURN SAT	77-076A-01H	N/A		115
	SYSTEMATIC MTIS IMAGES,SATURN	77-076A-01I	N/A		115
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Appendices

APPENDIX A
LISTING OF SPACECRAFT BY REGION INVESTIGATED

Planetary Studies

MERCURY

Rm = 2,439 km

NSSDC ID	Spacecraft	Launch Date		Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
73-085A	Mariner 10	11/3/73	Pass 1	3/29/74	Flyby	704
			Pass 2	9/21/74	Flyby	47,000
			Pass 3	3/16/75	Flyby	327

VENUS

Rv = 6,051 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
62-041A	Mariner 2	08/27/62	12/14/62	Flyby	41,000
67-060A	Mariner 5	06/14/67	10/19/67	Flyby	4,000
73-085A	Mariner 10	11/03/73	02/05/74	Flyby	4,200
75-050D	Venera 9 Descent	06/08/75	10/22/75	Lander	0
75-054D	Venera 10 Descent	06/14/75	10/25/75	Lander	0
78-051A	Pioneer Venus 1 Orbiter	05/20/78	12/04/78	Orbiter	200
78-078A	Pioneer Venus 2 Bus	08/08/78	12/09/78	Entry	165
78-078D	Pioneer Venus Large Probe-Day	08/08/78	12/09/78	Entry	15
78-078E	Pioneer Venus Small Probe 1-Night	08/08/78	12/09/78	Lander	0
78-078F	Pioneer Venus Small Probe 2-Night	08/08/78	12/09/78	Lander	0
78-078G	Pioneer Venus Small Probe 3-Day	08/08/78	12/09/78	Lander	0
81-106D	Venera 13 Descent	10/30/81	03/01/82	Lander	0
81-110D	Venera 14 Descent	11/04/81	03/05/82	Lander	0

MARS

Rm = 3,397 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
64-077A	Mariner 4	11/28/64	07/14/64	Flyby	9,846
69-014A	Mariner 6	02/24/69	07/31/69	Flyby	3,431
69-030A	Mariner 7	03/27/69	08/05/69	Flyby	3,430
71-051A	Mariner 9	05/30/71	11/13/71-12/27/72	Orbiter	1,387
75-075A	Viking 1 Orbiter	08/20/75	06/21/76-08/07/80	Orbiter	1,513
75-075C	Viking 1 Lander	08/20/75	07/20/76-11/08/82	Lander	0
75-083A	Viking 2 Orbiter	09/09/75	08/09/76-07/25/78	Orbiter	1,499
75-083C	Viking 2 Lander	09/09/75	09/03/76-04/01/80	Lander	0

JUPITER

Rj = 71,490 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
72-012A	Pioneer 10	03/03/72	12/03/73	Flyby	210,000
73-019A	Pioneer 11	04/06/73	12/04/74	Flyby	36,800
77-084A	Voyager 1	09/05/77	03/05/79	Flyby	278,000
77-076A	Voyager 2	08/20/77	07/09/79	Flyby	650,000

SATURN

Rs = 60,270 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
73-019A	Pioneer 11	04/06/73	08/05/79	Flyby	21,400
77-084A	Voyager 1	09/05/77	11/12/80	Flyby	124,000
77-076A	Voyager 2	08/20/77	08/05/81	Flyby	100,000

URANUS

Ru = 25,660 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact and Useful Data	Mission Type	Closest Approach (in km)
77-076A	Voyager 2	08/20/77	01/24/86	Flyby	81,500[1]

NEPTUNE

Rn = 24,820 km

NSSDC ID	Spacecraft	Launch Date	Planetary Contact	Mission Type	Closest Approach (in km)
77-076A	Voyager 2	08/20/77	08/25/89	Flyby	

[1] Height above cloud top.

Interplanetary Studies

PLANETARY PROBES WITH INTERPLANETARY DATA

NSSDC ID	Spacecraft	Launch Date	Mission Type
62-041A	Mariner 2	08/27/62	Venus Flyby
64-077A	Mariner 4	11/28/64	Mars Flyby
67-060A	Mariner 5	06/14/67	Venus Flyby
72-012A	Pioneer 10	03/03/72	Jupiter Flyby
73-019A	Pioneer 11	04/06/73	Jupiter/Saturn Flyby
73-085A	Mariner 10	11/03/73	Mercury/Venus Flyby
77-084A	Voyager 1	09/05/77	Jupiter/Saturn Flyby
77-076A	Voyager 2	08/20/77	Jupiter/Saturn/Uranus/Neptune Flyby

HELIOCENTRIC SPACECRAFT

NSSDC ID	Spacecraft	Launch Date	Orbit Type
60-001A	Pioneer 5	03/11/60	0.706 x 0.993 AU
65-105A	Pioneer 6	12/16/65	0.813 x 0.983 AU
66-075A	Pioneer 7	08/17/66	1.009 x 1.125 AU
67-123A	Pioneer 8	12/13/67	0.992 x 1.008 AU
68-100A	Pioneer 9	11/08/68	0.754 x 0.990 AU
74-097A	Helios-A	12/10/74	0.309 x 0.985 AU
76-003A	Helios-B	01/15/76	0.289 x 0.983 AU

APPENDIX B
CHRONOLOGICAL LISTING OF SPACECRAFT

S/C Common Name	Launch Date	NSSDC ID	Region Investigated							Page No.
			Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Inter-Planetary	
Pioneer 5	03/11/60	60-001A							●	39
Mariner 2	08/27/62	62-041A		●					●	17
Mariner 4	11/28/64	64-077A			●				●	18
Pioneer 6	12/16/65	65-105A							●	40
Pioneer 7	08/17/66	66-075A							●	43
Mariner 5	06/14/67	67-060A		●					●	20
Pioneer 8	12/13/67	67-123A							●	47
Pioneer 9	11/08/68	68-100A							●	50
Mariner 6	02/24/69	69-014A			●				●	22
Mariner 7	03/27/69	69-030A			●				●	24
Mariner 9	05/30/71	71-051A			●					26
Pioneer 10	03/03/72	72-012A				●			●	53
Pioneer 11	04/06/73	73-019A				●	●		●	60
Mariner 10	11/03/73	73-085A	●	●					●	32
Helios - A	12/10/74	74-097A							●	11
Venera 9	06/08/75	75-050A		●						81
Venera 10	06/14/75	75-054A		●						82
Viking 1	08/20/75	75-075A			●					83
Viking 2	09/09/75	75-083A			●					94
Helios - B	01/15/76	76-003A							●	14
Voyager 2	08/20/77	77-076A				●	●	●	●	111
Voyager 1	09/05/77	77-084A				●	●		●	104
Pioneer Venus 1	05/20/78	78-051A		●						67
Pioneer Venus 2	08/08/78	78-078A		●						76
Venera 13	10/30/81	81-106A		●						83
Venera 14	11/04/81	81-110A		●						83

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